



VOL. 8:

APRIL, 1856.

NO. 4.

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HEDGING--OSAGE ORANGE.

In England the training and care of the hedge constitutes an independent part of the farm operations, and on many of the estates the hedger has grown up with the hedge—with this particular branch in charge, and no part of the labor necessary for the permanence and beauty of the hedge is for a day neglected; and hence, in no part of the world are more perfect specimens of the hedge to be seen than in England. But the hedge plants which thrive so well in the moist, cool climate of England, prove, after a few years, total failures under the dry, hot sun of America.

The Osage Orange appears by nature to meet exactly the requirements of our climate as a hedge plant. Its long lateral roots extend beyond the overhanging branches of the hedge, and seem to resist the most intense heat of our driest summers. But after all the trials with this plant for hedging, except where it has been employed by experienced and practical men, upon an extended scale, on the western prairies, we venture to assert that fifty hedges have been planted, which have proved complete failures, where one has been trained to perfection.

The Osage Orange is naturally a tree which grows to the height of thirty or forty feet, but which, under proper treatment, bears restraint in a hedge admirably, and unless cut back unsparingly, and at the proper times, checking its upward tendency, throwing the circulation into the lowest lateral branches, so as to produce a strong, dense base, it runs at random, forming no protection against the smaller animals, and proves a failure, with the loss of all the labor bestowed.

In the first place, it is folly to attempt to cultivate a hedge without a full knowledge of what is necessary to complete success in planting and

its subsequent treatment; and it is still greater folly to incur the expense of growing the plants and setting the hedge without bestowing upon it the subsequent labor necessary for the perfection of the work. For if the necessary cuttings are omitted at the proper time, there is no remedy but to cut back to the ground, and start anew, and if this is neglected until the plants acquire too great size, the attempted hedge becomes a nuisance, and results not only in a loss of all the cost and labor bestowed, but requires no small amount of labor to remove it. This is the experience of thousands; and yet with proper care there is no plant that will produce a more permanent and beautiful hedge than the Osage Orange.

Although the Osage Orange is a native of a southern climate, on dry land it is found to withstand the severest winters in latitudes as high as the 42d and 43d degrees.

PREPARING AND PLANTING THE SEED.

Seed of the previous season's growth should always be procured if possible, but those a year older, if they have been properly handled, will generally vegetate. Where the planting is to be done on a large scale, it is the practice of some to soak the seed for a day or two, and then mix them with twice their bulk of sand and expose them in shallow boxes about mid-winter to the frosts; but about as safe a plan as any is to defer the soaking until about two weeks before they are to be planted. The seed are very slow to vegetate, and require a higher temperature than almost any other kind. They should always be slightly sprouted before they are planted, otherwise the weeds get the start of the young plants, requiring no small amount of labor to clean them out.

In latitude about 38°, from the 20th to the 25th of April is the proper time to put the seed

to soak. Warm water should be applied, and the vessels containing them should be set in a warm place and remain there three or four days, changing the water every day; drain the water off and mix two parts sand to one of seed; put them into boxes five or six inches deep; cover the top with a cloth and put them in a warm place and keep them moist. Holes should be bored in the bottom of the boxes to afford drainage in case there should be an excess of water. If the ground is wet, and the weather warm and favorable for planting, the sprouting of the seed is hastened by placing the boxes under glass in a hot-bed, and stirring the seed occasionally.—As soon as the germs begin to appear they should be planted.

The ground for the seedlings should be rich, and should be put in the best possible order by deep plowing, rolling and harrowing. Stretch a line and open the drills with a pointed stick, an inch deep, or a marker may be readily made to open three or four drills at a time. Fifteen or eighteen inches apart affords sufficient room for the drills, but in order to save labor in hoeing, we prefer to put them thirty inches apart, so as to admit the passage of the cultivator.—Those who plant them on a very extensive scale use the ordinary wheat drill, removing every alternate tooth. Sift the sand from the seed, and drop them so as to average half an inch apart. A great amount of labor may be saved in the work of weeding and hoeing the young plants, if care is taken in covering the seed, to raise a sharp ridge one inch high immediately over them. In planting on a small scale, this may be done with the hands, but where more extensive planting is required a wooden or a steel scraper may be made in the form of a hoe, leaving a notch in the form required for the ridge, bending the sides in an angular direction, so that in drawing or pushing it over the rows the seed may be covered, forming the ridge as required. If the weather is favorable, in eight or ten days the young plants will be started to near the level of the ground; then with a fine rake remove the ridge and with it thousands of weeds will be destroyed, which if suffered to remain until the plants are large enough to be hoed, will require much labor in weeding. This raking not only kills all the weeds along the rows, but breaks the crust and leaves the surface in the best possible condition to promote the growth of the young plants. With this dressing in advance, nearly one-third of the amount of the labor of cultivating is saved.—The ground should now be kept clean and mellow, and this may chiefly be done with the cul-

tivator. If the season is favorable, and the work of cultivation well done, the plants will be of suitable size to set in the hedge-row the following spring.

DIGGING THE PLANTS.

The plants may be taken up in the fall, or they may remain in the nursery until spring.—It is as well to dispose of the work in the fall. The plants may be kept in a dry cellar, slightly filled in and covered with earth; or they may be buried in the field, in alternate layers of plants and earth; a dry situation should be chosen.

Before the plants are taken up, it is best to cut off the tops to within six inches of the ground; this is done most expeditiously with a scythe or sharp briar hook. The plants may be turned out with a common two horse plow; but where large crops are grown, a subsoil plow, with a sharp steel share, and the wing or mold-board removed, is run under the rows, and cuts off the tap roots and loosens the plants, so that they may be gathered up with care, and counted and packed as the work progresses.

PREPARING THE GROUND AND SETTING THE PLANTS.

The ground for the hedge-row should be broken up ten or fifteen inches deep, and ten or twelve feet wide, with the common plow and sub-soil plow. If the land is in grass or otherwise foul, the plowing should be done in the fall repeated in the spring, and rolled and harrowed fine, leaving the surface slightly rounding on the line of the plants. April is the most suitable season for setting the hedge.

The plants should be shortened both top and bottom to about nine inches in length, leaving but one inch of the top; they should then be assorted, and those of uniform size and vigor set together; the largest should be set on the poorest ground. Stake off the ground and draw a line where the row is to be set. An iron pointed dibble is a good implement to open the holes with. This may be made an inch or more in diameter, and pointed; it should have a cross-piece for a handle at the top, and a projecting arm twelve inches from the bottom, to aid in inserting it with the foot.

It was formerly recommended to set the plants ten or twelve inches apart in the row, but from later experience six or eight inches is found wide enough. Some hedgers advise setting the plants as close as four or six inches. The stronger the land the nearer the plants should be set. Open the hole perpendicularly, and insert the plant half an inch deeper than it stood in the nursery, leaving half an inch of the top above the ground. Care should be taken to fill the hole, bringing the earth in close contact

with the whole length of the root, from the bottom upwards; this is best done by entering the dibble the length of the plant a short distance from it, crowding the earth towards the root, and with the foot press the surface around the plant. The planting may also be done with the spade, making an opening for the roots and closing it in the same way as with the dibble.

The row should be kept clean of weeds and the ground well and thoroughly cultivated with the plow and cultivator, throughout the season; and before winter sets in it would be well to turn a shallow furrow from each side towards the plants to turn the water from the row.

If any of the plants make a strong, upright growth in advance of the others, they should be shortened during the summer with a corn knife or hemp-hook; this should also be done during the subsequent growth of the hedge, whenever these strong, upright shoots appear.

SECOND YEAR.

The following spring after the plants are set, the furrow should be leveled off and the plants cut down to within one inch of where they were first cut. This is done with a strong scythe. If any of the plants have failed to grow, the vacancies should be carefully filled with strong plants from the nursery, held in reserve for the purpose. The row must again be well cultivated as in the preceding year. About the last of June the tops must again be cut off to within three inches of the last cutting.

THIRD YEAR.

Before the sap rises the tops should again be cut to within three or four inches of the preceding cutting, and again repeated in June, leaving four or five inches of the last year's growth. The cultivation should be continued through this season, which will be all that will be required; the lower branches having extended so as to keep down the weeds.

FOURTH YEAR.

The first cutting for this year should be within six inches of the last, and the lower lateral branches should now be cut for the first time, to within 18 inches of the main stem, on each side, leaving the hedge three feet wide at the bottom, and tapering upwards, so that when finished it will present a handsome oval, roof-like form. After this the semi-annual trimmings must be continued, leaving but a short growth each time, so that the hedge shall not exceed, at the end of six or eight years, five feet wide at the ground, and not over five and a half feet high.

The natural tendency of the Osage Orange is to send up strong, upright branches, which diverts the circulation and checks the growth of

the lower branches. In order to prevent this, and add strength, vigor and compactness to the base of the hedge, these upward branches must always be checked as soon as they appear, and there must be no omission or delay in the regular trimming. It is from this neglect that so many failures to make a hedge of this plant, have arisen. It must be a settled determination of every one who plants a hedge that the work shall be well and faithfully done, and that the necessary shortening-in of the branches shall never be delayed beyond the proper period; or the attempt will prove a failure, and the labor and expense will be in vain.

A correspondent (J. F. F.) in the March number of the *Valley Farmer*, gives the experience of Mr. S. H. McGinnis, of Clay county Missouri, in hedging with the Osage Orange, which it appears has not been altogether successful. We think the difficulty may readily be traced to some local cause; but the most probable cause of the failure was in setting the plants in double or parallel rows; this method has long since been abandoned. It is found that the double rows shade the ground too much, and cause the objection complained of.

The hedge-row should never be set in the shade of an old fence. It must have the full benefit of the sun and a free circulation of air.

Hemp and Flax Culture—Machines for Cutting and Dressing Wanted.

Amid the multiplicity of new and improved agricultural implements and machines that have been brought into use to relieve the farmer from the severe burdens that formerly taxed his energies and his strength in the performance of hand labor in every department of farm operations, it is a little to be wondered at that no efficient machines have yet been invented to meet exactly the wants of the farmer in the two important operations of cutting hemp, and breaking and dressing hemp and flax.

We regard hemp and flax among the most important crops that are grown by the American farmer. Indeed they now occupy a more conspicuous place among the products of the soil, and in the trade and commerce of our country than cotton did at the time Whitney brought to light his cotton gin—an invention which has caused an increase in the product of the great cotton staple from a few thousand bales to three millions of bales annually, and which now exerts a greater influence upon the commerce and manufactures of the world than any other product.

The culture of cotton is limited to the southern and warmer portions of our country, while hemp and flax may be grown in any State or Territory possessing soil of sufficient richness for the production of wheat and corn.

If the proper machinery for cutting hemp in the field and the preparation of the fibre of hemp and flax were introduced, the trade arising from the manufacture of these materials, like the trade in cotton would be coextensive with civilization and increase to an extent almost incalculable.

A number of machines have already been invented for the preparation of flax fibre, which perform the work well, but they require further improvement to render them capable of accomplishing the work with greater expedition.

The greatest number and most valuable inventions and improvements in the country, are confined to the northern and eastern manufacturing states, where the requirements of the machinery for cutting and breaking hemp are but little understood by the mechanics and inventors.

With the light we already possess in the manufacture of harvesting machines, we can see but little difficulty in the way of constructing a machine that will cut hemp in the field as perfectly as wheat is now cut. But in the machinery for cutting and dressing the fibre we are not so far advanced, although to perform this operation perfectly there is nothing half so intricate, or that requires machinery near so complicated and difficult to make as the Hoe Printing Press, or hundreds of other machines now in every day use. Machinery for the perfect performance of these operations will be made, and we believe at no distant day, and when accomplished, it will be so simple in construction and operation, that the world will wonder, as it now does to see a field of wheat cut with so much ease and dispatch, that the thing was never thought of before.

Some six months since, Mr. M. M. Manly, an extensive marble manufacturer of Vermont, made known through the columns of the *Scientific American* (a paper that is, or should be taken by every mechanic, artisan and man of science in the country) that an invention was needed for sawing tapering forms in marble, and offering a prize of \$10,000 for such an invention. Within the short space we have named sixteen patents have been granted for machines of this character, several of which are now doing satisfactory work. A number more of the machines are now before the Commissioner of patents still waiting their turn for exam-

ination, while others are in a state of progress of construction.

This want was no sooner made known to American inventors than a hundred minds were at once engaged to meet it, and in six months the demand is more than supplied. So valuable have some of these machines proved, that they have refused the \$10,000 offered, and one of them has sold the right to be used in one single establishment for \$1,000, and such is its efficacy, that it is said it will pay for itself the first year. The marble interest of the State of Vermont alone, is set down at \$15,000,000, and the value of these inventions throughout the country can hardly be estimated.

Now, had not inventor's minds been called to this subject and stimulated by the proffered reward by Mr. Manly, it would probably have been years before any invention would have been brought to light to meet this particular requirement, although the work of marble cutting is carried on in the midst of inventors.

Now, let some one or more of the enterprising hemp growers of Kentucky or Missouri make known through the *Scientific American*, published by Munn & Co., of New York, that such machines are wanted, and offer a reward of \$10,000 or \$20,000, for such as will perform the work to satisfaction, and we venture the prediction, that in twelve months the demand will be supplied by more than one inventor, which will result in making for them fortunes, and add millions to the annual value of this great Western staple.

In offering a prize \$10,000, or even twice that sum for a machine that will successfully cut hemp, uniformly close to the ground, and to lay it off in even and compact bundles as it advances; and an offer of \$20,000, or even \$50,000 for a machine that shall break and dress hemp or flax with expedition, as well as it is done by hand, the person or persons making the offers run no risk, for if the machines do not meet the requirements, the money is not expected to be paid, but if the machines are produced, and operate successfully, they will be worth to the parties making the offers, several times the amount of the highest sums we have proposed. But the offers of extravagant premiums are not necessary; ten or twenty thousand dollars will stimulate to successful action the inventive powers of the most profound geniuses of the land.

These are important suggestions, and we hope we have not made them in vain. They are important to the individual interests of the farmer and vastly important to the interests of the State and country.

CULTURE OF MADDER.

A "Subscriber" requests us to describe the mode of cultivating Madder—the usual production per acre, and the price per barrel, &c.

Madder, *Rubia Tinctoria*, is extensively cultivated in Holland, and to some extent in France and in other countries of Europe. It is imported in immense quantities into the United States. We have not the data at hand to determine the exact quantity that is imported, but from the best information we have been able to obtain, the quantity may be safely estimated at *seven thousand five hundred tons* annually.

Madder is now selling in our Western markets by the barrel, at *twelve and a half cents* per pound. Estimating the quantity imported into the United States at an average price of ten cents a pound, by the cargo, it amounts to the enormous sum of *one million five hundred thousand dollars* annually. This large sum is paid to foreign countries for an article that can be produced equal in quantity, and we believe on our rich western lands cheaper than it can be grown upon the high price lands of Europe.

Madder has been cultivated by a few farmers very successfully for a number of years past in Ohio, New York and probably in other States.

The only reason that Madder is not produced in our own country in quantity equal to the domestic demand, is the length of time required to bring the crop to maturity. The Americans are a go-ahead people and prefer to cultivate such crops as will enable them to realize the returns in the shortest possible period, not to exceed six or twelve months. It is from this cause that our country has been no better supplied with choice fruit. We have often heard the remark made by farmers, "It is of no use for me to plant fruit trees; I am too old to expect to live to see them come into bearing." Whether the investment is in fruit trees in the orchard, or Madder in the ground, the farmer who plants and cultivates them with proper care, adds so much to the cash value of his farm, which is as good an improvement as if it was in actual cash and loaned out at usurious interest.

To bring a crop of Madder to maturity it requires from three to four years from the time of planting; yet we are informed by those who have experience in the matter, that the quantity of land and the labor necessary is less in proportion to the value of the crop, than is required for any other farm crop.

We believe that our deep western soil is peculiarly adapted to the growth of Madder; and if it was taken hold of by intelligent and perse-

vering farmers and properly cultivated, it would be found one of the most profitable crops now grown, and important improvements on the Dutch method of cultivation would speedily be made. We deem it important that the American farmer should diversify his crops, and we know of none that can be added to greater advantage than Madder. In its cultivation there is nothing more intricate than there is in growing a crop of potatoes.

SOIL AND PREPARATION.

Madder will grow on almost any rich soil, but a deep, light loam, or alluvial bottom is the most suitable soil, but it must not be wet.—Any rich bottom or prairie land will require no manure, but on old, worn land it must receive a bountiful supply. It should be plowed deep with a large plow, followed by a subsoil plow, or if the soil is twelve or fifteen inches deep, a double or trench plow would do the work more effectually. If the land is in grass it should be plowed in the fall, otherwise winter or spring will answer. It should be well rolled and harrowed. Where there is not great depth of soil it is the practice to throw the land up in ridges four feet wide, leaving a space or alley three feet wide between the beds, but in a good soil we should prefer to plant the roots on a level surface.

In France the land for small crops is prepared with the spade, much as they would for planting a vineyard; although this adds to the cost, yet the yield per acre, is usually more than a third greater than when prepared by the best deep plowing.

PREPARING THE SETS AND PLANTING.

Sets are either grown from the seed, or are taken from the growing crop. Time is gained by procuring the sets when it is possible to do so. When only the seed can be procured, they should be planted in a well prepared garden mould; they may be planted in drills half an inch deep, leaving a sufficient space between the drills for weeding and hoeing. The young plants should be thinned out to three inches apart; if taken up with care the plants that are removed may be re-set with success.—The young plants should be kept free from weeds, and well hoed during the season, and the following spring they will do to set out. The sets or off-shoots from the old roots are usually planted; those are best selected when the crop is dug in the fall, or they may be taken from the growing crop in the spring before the eyes begin to sprout; the upper lateral roots are chosen. When the sets are selected at the time of digging, they should be covered with sand in the

cellar, or securely buried in a pit. The sets should be cut into pieces three or four inches long, each set with three or four eyes. The time of planting is as early in the spring as the ground can be worked, after the severe frosts are over. For planting, stretch a line, and with the corner of a hoe open a drill two inches deep, three of these drills should be made, with a space of two feet between them, leaving a space or alley of three feet, and then proceed with three more lines, &c. Into these drills drop the sets, about ten inches apart, and cover them. Eight or ten bushels of sets are required to plant an acre.

AFTER CULTURE.

As soon as the plants appear, the ground should be carefully hoed, so as to keep the start of the weeds; this cultivation must be continued and the weeds kept down during the season. As soon as the plants get to the height of one foot, the tops are to be bent down and covered with earth from the middle of the alleys, leaving two inches of the end of each plant uncovered. The plants must be turned down in different directions so as to uniformly occupy the spaces on the beds. As soon as the plants again grow to the height of a foot, they must be bent down and covered as before; this operation must be repeated as often as the plants make a sufficient growth, which is usually about three times during the first season; it may be done as late as September. The ground between the beds must be kept light and mellow by frequently running a one horse plow through it. The tops that are laid down, throw out innumerable roots, which so fill the ground, that after the first season, but few weeds are inclined to grow.

The Second Year.—The treatment the second reason is very similar to that of the first, requiring only that the weeds be kept pulled out, the alleys kept mellow with the plow and the plants covered, say twice during the season. Care should be taken to keep the beds level, as the plants are covered up, so as to retain the rain that falls on them.

The Third Year.—During the third summer but very little labor is required. The plants now cover nearly the whole ground, which will keep most of the weeds down; if any spring up they should be removed. If the land is good, and the seasons have been favorable, with good cultivation, the crop is usually dug at the end of the third season; but it is sometimes best to let it stand to the end of the fourth season; the quality will be improved and the quantity increased.

HARVESTING.

This is done about the latter part of August or the fore part of September. The tops are first cut off with a scythe or sharp spade near the ground; a large, strong plow, with a sharp coulter, drawn by a strong team, is then run a foot or more deep around the edge of the beds; the earth is then raked over with rakes or forks and all the roots gathered up; then another furrow is run around and the forking and raking continued until the whole is completed.

WASHING AND DRYING.

The roots should be washed as soon as possible after they are dug. The most convenient place for this operation is a running stream, if one is near, if not, a pond, or it may be a dam at a pump. For washing the roots, large sieves or riddles are used, but square frames three feet long and the proper width, with a bottom of woven wire, with about four bars or wires to the inch, would make the best riddles to wash the roots in. The boxes or riddles, with a half bushel or more of the roots at a time are placed in the water and rubbed about until they are clean. For drying the roots, hurdles or square frames with laths or slats across the bottom are the best; into these the roots are placed, say two inches thick. A scaffolding of poles so arranged, a foot or two above the ground, that the hurdles may have an inclination towards the sun, will greatly facilitate the drying. After the roots have been thus exposed a day or two, if the weather has been favorable, they will become so dry that the dew or rain will injure them; they must now be protected during wet weather and from the dews at night; this may be done by piling one hurdle above another and covering the top one with boards. With five or six days of favorable weather the roots will be sufficiently dry to store, ready for kiln-drying and grinding.

KILN-DRYING.

This is a simple process, and the cost of a kiln or dry house is but little. This may be made of any convenient size, by setting four or six posts in the ground so as to make a house twelve by eighteen or twenty feet square, on the ground, the longest posts may be 18 or 20 feet high and those on the lower side 4 feet shorter, so as to give sufficient pitch to the roof. Strips of two inch plank, three or four inches wide, are nailed around these posts at the bottom, at the top and around the middle; to these strips a covering of common boards is nailed, perpendicularly; all the joints and holes must be covered up. The roof may be covered up in the same manner as the uprights. In the inside of

the house standards are placed, to these, four feet from the floor, cross pieces are nailed, and so on for every two feet to the top; the roots are now put into the hurdles or drying frames and placed upon these cross pieces, one above another to the top. When this is done, a half a dozen or more of small kettles, or iron cooking furnaces, with a small quantity of lighted charcoal in each are distributed over the floor. This part of the operation will require constant attention, to replenish the fires and see that the roots are not scorched. If well attended to, in ten or twelve hours the roots will be sufficiently dry to grind; this may be known by their becoming so brittle as to break readily.

BREAKING AND GRINDING.

As soon as the roots have become sufficiently dry, they must be broken so that they can be readily ground in a common grist mill. The roots may be broken by pounding with sticks or flails upon a barn floor, or they may be better prepared for grinding, by running them through any of the corn and cob crushers now in common use, when they will feed readily from the hopper of the grist mill. It is important that the grinding be done without delay, as the roots absorb moisture from the atmosphere which renders the grinding more difficult. When ground it may be packed in barrels, when it is ready for market.

YIELD AND PROFIT PER ACRE.

The yield of course, will depend much upon the quality and condition of the land, care in cultivation &c. In France, the yield per acre, as may be seen by a report to the Academy of Science, made by M. de Gasparin, formerly Minister of the Home Department, on the cultivation of the Madder root, under spade culture, is set down at 3440 pounds per acre; cultivated on a large scale, with plow and horse-power, the yield is set down at 2240 pounds per acre, of dried root. In Europe, good account is made of the tops, as fodder for stock, and is considered equal in value to the best lucerne. The tops, when fed to cattle, have the peculiar property of turning their bones to a red color. This is often observed in the butcher's stalls in countries where Madder is grown. The yield of Madder, at the proper time of harvest, is estimated to be equal in pounds to the quantity of fodder for the first season after planting. The yield of fodder the second year is usually only about half that of the first.

We are acquainted with the names of but few persons who are engaged in the cultivation of Madder in the United States. Of these, Mr. Joseph Swift, of Birmingham, Erie county, Ohio,

is the most extensive grower. With but little experience in the business, some years ago, he raised 2000 pounds per acre, at a cost for interest on land, labor, grinding and packing, of \$100; his crop of 2000 pounds sold at 15 cents per pound, leaving a clear profit of \$200 per acre; and with the experience he has since acquired, he thinks he can easily raise 3000 lbs. per acre.

Some years since, Mr. J. Eaton, of West-Winfield, New York, was engaged in the successful culture of Madder and proposed to furnish sets boxed and delivered at Utica, any time between September and May, at \$2.50 per bushel. We have also been informed that Madder is cultivated at one of the Shaker settlements in Kentucky. We should be glad to receive any facts on the culture of Madder from any one engaged in the business.

CULTURE OF POTATOES.

The great demand for Irish Potatoes in the cities and towns of the South, and the direct communication with them via the Ohio and Mississippi rivers, has rendered the potato crop one of great importance to the farmers along the borders of these rivers, and the constantly increasing demand has created a branch of trade of no small magnitude.

There is no portion of the United States where individual farmers cultivate this crop so largely as they do here. And while whole crops are destroyed from year to year by that mysterious scourge the "potato disease" in other sections of the country, our crops have generally been exempt from its attacks.

We have not at hand the exact statistics of the product and shipment of the crop. Some of the largest growers plant from fifty to one hundred acres each. The average yield per acre on suitable land is 150 bushels. One dealer claims to have shipped from the port of Louisville during the past season about 50,000 bushels; but the aggregate of the entire shipments will not greatly exceed 75,000 bushels annually. From almost every port and landing along the rivers more or less are shipped.

Our light, rich soils, abounding in organic matter, are very naturally adapted to the growth of the potato, but our climate is not so favorable, because the season of the proper temperature for its successful cultivation is confined to too short a period to allow it always to come to full maturity, that is, the spring crop is frequently overtaken with dry, hot weather just at the period the tubers are forming, and the vines

are speedily dried up before the tubers are fully developed. For this reason the crop should be planted as early as the season will admit, so as to approach maturity before the heat of summer overtakes it.

It was the custom here, twenty years ago, with some of the potato growers, to defer their planting until *the dark of the moon in June*, in order that the crop might have the benefit of the cool weather of the fall to mature in. Occasionally good crops were in this way grown, but the drouth of summer often proved fatal to them. Another disadvantage resulted from late planting; the vegetation of the seed was frequently so far advanced, before the time of planting, that many of the strongest eyes were broken off, and which were never renewed with the same degree of vigor. The planting is now more generally confined to the spring, and with much more certainty of good success.

In growing potatoes on so large a scale, it is not expected the land will receive the manuring that the most successful cultivation requires; but without manure the best preparation is clover ley. A good blue grass or timothy sod will also very generally produce good crops.

Upon the light, sandy soils about Albany, N. Y., and in other sections of the East, guano has been applied to the potato crop with most excellent success. From two to three hundred pounds is applied to an acre, scattered broadcast and plowed or harrowed in. With this application good crops have been grown three or four years in succession on the same land.

Some of our potato growers and market gardeners are discussing the question of economy between hauling manure from the city stables, mixed as it is with saw-dust, or ordering guano from the Atlantic cities. The experiment is worth trying, and we believe it would be found profitable. It has already been applied in the West to garden products, particularly to turnips and cabbage, to great advantage.

In soils that are benefited by the application of plaster, from one to two bushels to the acre, scattered broadcast just as the potatoes are coming up, is found beneficial.

In our climate, the success of the potato depends much upon the variety that is planted. The *Meshannock* is now the favorite over all other kinds. Its superior quality, early maturity, its peculiar habit of forming but one set of tubers, and these immediately at the base of the vines, and their uniform size, renders it much better suited to our climate than any other kind.

If clover or grass sod is to be broken up, the

earlier it is done in the spring the better. The usual time of planting is from the 1st to the 15th of April; some prefer planting as late as the first of May. But the crop cannot be planted too early after the ground has become dry enough to work kindly.

It has long been a question whether small or large, cut or uncut potatoes are best for seed. From accurately conducted experiments, the strongest testimony is in favor of large potatoes cut in two pieces. Small potatoes, under favorable circumstances of soil and climate, have sometimes produced as good crops as large ones. The eyes in the small potatoes are smaller, and will necessarily produce more weak and puny plants than those from larger and more fully developed tubers. But while potatoes command the price in market they have for some years past, the best grown ones are usually sold and the smaller ones are planted.

The success of the crop depends much upon the mode of cultivation. One great error, too generally practiced, is in earthing up the plants too high. We have carefully tried the two methods of hilling and level culture, and find that the latter method for potatoes and for corn is the best.

It is not safe to harvest potatoes, except for immediate use, until the cool weather of fall sets in, and the ground then is generally covered with grass and weeds, and the only earthing necessary is to mark where the rows are. It is better to hoe out the weeds than to attempt to kill them by earthing up. With the Open Mold board or Cultivator Plow, all the necessary dressings may be given without earthing too high.

Mr. T. H. Collins, near New Albany, Indiana, is one of the best farmers and most successful potato growers we are acquainted with. He is more thorough in preparing his land and in cultivating the crop than any of our potato growers. At the time of the first dressing he uses a roller made in three sections; the middle section is 18 inches long, and the two outside sections are each 12 inches, leaving a space of 15 inches between each section. The diameter of each section, in the middle, is 24 inches, and these are turned down at the ends to 22 inches, leaving them 2 inches rounding. This roller is run between the rows, with one horse, just at the time the plants are coming up, which effectually crushes all the remaining clods and destroys the young weeds, leaving the ground in the best possible condition for the future working. Mr. Collins tried level culture last year, and the result was so satisfactory, he informs

as he will continue it the coming season. We make the following extract from a letter from Mr. Collins, on the subject of his method of cultivation. He says: "I put the ground in good order as early in the spring as possible, by thoroughly plowing, rolling and harrowing, on the principle that *when soil is well prepared it is half cultivated*. I then mark the drills with a one horse plow, thirty inches apart, three or four inches deep; then plant the sets eight inches apart, two eyes to a set; and cover with a one horse plow, throwing two furrows to a row, in a sharp ridge. When the potatoes have started one or two inches above the common level of the ground without regard to the ridges, then run a harrow with the back downwards across the ridges, with the teeth of the harrow projecting on the back side 1 1-2 inch; adding weight if necessary to break down the ridges to within one or two inches of a main level of the field, or near to the tops of the potatoes. If the ground is at all cloddy, I next pass the roller between the rows." After this Mr. Collins gives the crop four dressings, first with a fine tooth harrow between the rows, then with cultivators and plows, earthing slightly each time. At the last plowing the earth is not thrown directly against the plants, but a distance of two or three inches from them on each side, leaving the ground dishing, so as to hold the water around the plants from light rains. This is more labor than most farmers are willing to bestow on the crop, yet we think it is labor profitably expended. After the roller has been passed through the rows, the crop should receive, at proper intervals, at least two good dressings with the expanding cultivator, and one with the open mold-board cultivator plow, the last time running twice in a row.

HARVESTING THE CROP.

This is the most laborious part of the work. The usual practice has been to turn out the potatoes with a common two horse plow, but recently a new implement has been introduced, by which more than half the labor of digging in the ordinary way is saved. The weeds and grass are first cleared off, and the implement is run immediately under the row, lifting the potatoes and throwing them entirely upon the surface of the ground, while the earth passes between the openings in the mold-board and falls directly back into the furrow.

The Cultivator Plow referred to, is made on the same plan, only it is much smaller and suited to one horse. We regard them both as decided improvements. They are manufactured in Louisville.

SPRING WHEAT.

Last spring, owing to the short crops of all kinds of grain of the preceding season, an unusual quantity of Spring wheat was sown throughout the wheat growing sections of the country. Several new varieties were introduced, among these were the kinds known as the Fife and Canada Club. Of the last named variety a considerable quantity was received from Wisconsin and sold in the Louisville market to the farmers of Kentucky and Indiana. In order to ascertain with what success it had been grown, we wrote to a number of the farmers who made the trial of it, and their answers very uniformly speak of extraordinary products.

Last year was a remarkably favorable one for wheat, as well as for all other kinds of grain, and it cannot reasonably be expected that spring wheat will always produce so large a crop.

It is probable that there are some persons who, from various causes, failed to sow winter wheat to the extent they wished; they can make up any deficiency now by sowing the spring variety. The ground requires the same preparation as for winter wheat or other spring grain.

We subjoin the following extracts from some of the letters we have received, giving the smallest as well as the largest products.

N. H. P., says: "I sowed three bushels on two and a half acres of stalk land, on the first day of April; I plowed it under with a one horse Rounder plow, and then harrowed it.—The product was 75 bushels. The land was strong and in good heart."

Another says: "Considering the very heavy hail storm we had just as the wheat was in bloom, I done very well. I sowed three acres, one bushel of seed to the acre, and saved 77 1-2 bushels, which is better than I have ever done with any other wheat."

J. H. D. Sowed five bushels of seed on seven acres of strong corn land, which had been in meadow several years previous to the corn crop. "I harvested 165 1-2 bushels of clean wheat of good quality. The crop was however injured by a severe hail storm that passed through the neighborhood. The yield was 23 1-2 bushels per acre, or 33 bushels to one bushel of seed sown. I did not suppose I had put the seed on so much land until I measured it."

T. G. D. thinks he sowed his too late, say from the 1st to the 5th of April. It produced from 18 to 20 bushels to the acre; thinks one bushel to the acre is sufficient.

Another sowed five bushels of seed and harvested 105 bushels.

J. A. H. sowed 7 1-2 bushels on six acres of land and harvested 20 bushels to the acre.

S. T. D. sowed five bushels of seed on five acres of land on the last day of March, the product was 90 bushels. It was sown on stalk land of good quality, plowed under shallow with a two horse plow, and harrowed fine.—Soaked a part of the seed in strong lime, and then rolled in quick lime, and sowed and plowed in immediately, upon this there was no smut. On the part not soaked and limed there was a slight show of smut.

We think in every instance we have given, too little seed was sown on the land. The northern farmers usually sow 1 1-2 to 2 bushels of seed to the acre. Our seasons usually advance so rapidly that spring grains do not tiller, or spread so much as they do farther north where the warm weather approaches more gradually, consequently we think we should sow more seed than the northern farmers do. In sowing both grain and grass we are confident our farmers are the losers in not sowing more seed.

[Written for the Valley Farmer.]

Importance of an Agricultural Paper in Kentucky—Steam Power for Farm Purposes.

MR. BYRAM—*Dear Sir:*—Your letter of the 21st ult. was duly received, and I take this occasion to express to you the pleasure and satisfaction the *Valley Farmer* affords me. It fully meets my expectations, and I hope will be nobly sustained. It is high time our Kentucky farmers were waking up from their long sleep, and being aroused to the full appreciation of the great importance and immense advantage of a general diffusion of agricultural knowledge. It is absolutely necessary, if they mean to keep pace with their brother farmers in other States. If progress is our aim, it is essential to know what others are doing—what improvements are being daily made in the art of cultivation—in the management of stock, and what new implements and labor-saving machines can be turned to our advantage. There can be no better medium for such communication, than a well managed and well supported agricultural paper, published "at home and among us," and adapted to our special wants and circumstances. Such, I hope, the *Valley Farmer* will prove to be.

You request me in your letter to furnish you with an account of my "Portable Steam Engine for Farm Purposes," which I do with pleasure, fully assured that the substitution of

such a steam power, on all our farms of moderate size, is only a *question of time*.

The Engine as yet has been tried only under the most unfavorable circumstances. Standing out doors, entirely unprotected, the weather intensely cold, the wood green, the machinery all new, many little advantages not given it,—yet it more than equalled my expectations, and gave entire satisfaction to all who saw it work. I tried it threshing grain with perfect success—not using more than one-third the amount of steam which was kept up, without the least difficulty—nor did there appear to be the least danger of setting fire to the straw. I then tried it crushing corn in the cob with one of Pitt's Crushers, which I have had in use for the last four years, and though it was dull, and many of the teeth broken, with *such* an application of power, I never saw better nor faster work done. I also tried the engine cutting straw, corn stalks and hay with equal success, using one of Sinclairs 13 inch cutters. I was satisfied that the engine could have driven the three machines all at the same time. Will the Engine do? is a question quite settled with me, and in future I shall use it as a motive power for all the machinery on my farm, to which power can be conveniently applied. The space occupied by my Engine is 6 by 9 feet. The boiler is 41 inches in diameter, and made of the best No. 4 Philadelphia stamped iron. The exhausted steam passes into the smoke pipe, killing all the sparks. The smoke pipe is 19 feet high and 12 inches in diameter, which gives a strong draft. The whole machine is mounted on a strong iron truck, with wheels 20 inches in diameter, and can be easily drawn to any part of my farm by four horses. My Engine can be worked up to about an eight horse power. The weight, including the truck, is 4900 lbs. These engines are manufactured by Messrs. A. N. Wood & Co., and for compactness of form, simplicity of construction, arrangements of working parts, durability and good workmanship, they can scarcely be surpassed. They are easily managed, as you may judge from the fact that mine is being *safely* run and perfectly well attended to by one of my negro boys, who had never so much as *seen* an engine before. The price at which these engines are afforded places them within the reach of nearly every farmer. They are made from 2 1-2 to 10 horse power, costing from \$225 to \$835. My engine consumes from three to four barrels of water per day, and about 1-4 cord of wood.

If I have omitted anything in my account of the Engine, I shall take pleasure in supplying

any further information I may possess in regard to it.

Yours truly,

J. A. HUMPHREYS.

Summer Forest, Ky.

MR. HUMPHREYS has our thanks for his valuable communication on the Steam Engine, and we think the farming public will award him many thanks as the first to introduce steam power for farm uses.

The Steam Engine is now so improved and simplified that it is rendered available for all purposes where power is required, and is found cheaper than any other kind of power; and we are glad to learn that one prominent farmer and stock grower in Kentucky is about to demonstrate its value and importance to that branch of farming. It is a subject to which we have intended for some time to call public attention. Steam for farm work has long been used in England, and is now introduced in many parts of our own country. At the New York State Fair, held at Rochester four years ago, we saw one of these engines exhibited by Hoard & Bradford, of Watertown, which was manufactured expressly for farm work. Since that time they have increased the manufacture of Portable Engines to several hundred annually, and similar establishments are springing up in many other places.

We have long been satisfied that steam could be used with much economy by the Western farmers and stock growers. Indeed, we believe that any considerable stock feeder would save the entire cost of an engine in one year, by applying it to grinding all the grain and cutting all the hay and straw he feeds to his stock. One constructed to run on wheels is equally adapted to grinding, threshing, sawing wood, &c., and may be drawn to any field on the farm as easily as the ordinary horse power is carried and set up. Some may object to steam for threshing, on account of the danger from fire. We have seen a sheaf of dry straw thrown across the smoke pipe, and it was found impossible to burn it, the sparks all being deadened by the scape steam. As troublesome as it may now appear, cooking food for hogs and other stock will be practiced when its importance is understood and appreciated, and the scape steam from the engine may be used for this purpose to great advantage.

The iron horse power now in common use in Kentucky is probably the best that our farmers can use, being strong and easily managed by farm hands, but they are of the most objectionable construction as it regards the economy of

the power applied, on account of the great amount of friction to be overcome, while the friction of the steam engine would hardly exceed twenty pounds. An engine with proper care will probably outlast half a dozen horse powers.

We would suggest to Mr. Humphreys and others who have engines with tubular boilers, to use soft water, otherwise they will find them objectionable on account of the accumulation of lime in the tubes. For our limestone country, we think the "Cornish" boiler will be found preferable.

[Written for the Valley Farmer.]

HINTS ON BUILDING.

A good house, well and conveniently constructed, is of paramount importance in conducing to the health and comfort of those who design to occupy it. I need offer no lengthy argument to convince any reasonable individual of the truth of this statement; yet how few realize the vast amount of actual discomfort attributable directly to the want of properly considering the matter in hand, and yet those very individuals are able to appreciate the good arrangement and construction of a house, if such an one is shown them. Now I think that of all other classes the Farmer is probably the greatest sufferer from such want of proper consideration. Who does not love to see a good, substantial, convenient and tasty house; and who cannot see in a moment that true happiness is attainable in such a house (other things being equal) much more readily than in one in which these qualities are wanting. I have had a somewhat extensive experience in the building line, and having not much else to do now, I propose to give your readers some hints, which, if they see fit to appropriate, will no doubt help materially to advance the comfort of home.

Let us then begin at the starting point: The cellar should be 8 feet deep from the under edge of the first floor of joists. This at first, would appear unnecessarily deep, but as I propose to keep both rats and mice out of the cellar, and in fact out of the house, it will not be found too deep when finished. We will suppose the excavating completed, and the bottom of the cellar nicely leveled. A sufficient number of flat rock should be collected to form a layer round the whole cellar, their edges closely fitted together and laid down as the first course of the foundation wall, and projecting 8 or 9 inches beyond the outside line of the foundation or cellar wall. This is to prevent the rat which has burrowed down on the outside from enter-

ing the cellar. Experience has proved that this is almost an infallible preventive in such cases, but as an additional precaution is necessary in case the troublesome customer should (which is frequently the case) find his way in through a door or window, which might be inadvertently left open, I will describe my method of rat-proofing the cellar floor. After having prepared a suitable amount of McAdamising—which may consist of either stone or hard burned pieces of brick broken up fine—(the size of an egg or smaller) I proceed to lay the whole floor over with flat, thin rock, laying them as solid as possible, and as close together as I can—(the larger the slabs the better the job). I then spread the McAdamising evenly over, to the depth of 3 or 4 inches, settling them in as firmly as possible, and having prepared my grouting—common lime and sand mortar, made thin by adding water and well mixing—pour the grouting over until all the cavities are filled; if broken bricks are used the grouting will need to be thinner, on account of the rapid absorption. If I design having a board floor, I now lay down my scantling 4 by 4 from 2 to 4 feet apart, or more if the case will admit of it, after which fill up between the scantling with McAdamising and grouting as before, taking care to have the top of the McAdamising no higher than the tops of the scantling. After the grouting, take some mortar and smooth over the top so as to make a level surface, that the boards may have a good bearing and no cavities left; the boards are then nailed down, fitting the edges close together; well seasoned boards should be used, otherwise you will soon have the cracks grinning at you. Such a floor will last a long time if the proper materials are used. I would recommend pine. The best floor, however, will be found to be good paving bricks, laid closely and neatly pieced up; in which case, the scantling would of course be omitted. Such a pavement, if laid in mortar—if laid in sand as is sometimes done, the mice are apt to get under the bricks and be troublesome—will last a life time, and is in reality the cheapest in the end. We now have the cellar reduced to 7 feet, or thereabouts. Care should be taken to fill the cellar walls well with mortar, as otherwise they may, and often do, become a harbor for vermin. The wall should be continued up to the top of the first joists, that no offset be left from which to gnaw into the rooms above, as often occurs. Care should be had that a sufficient number of windows be put into the cellar, that a thorough ventilation may at all times be easy, and in addition, one or more flues should be carried up from the cellar

for the same purpose; these are best carried up in the chimney-jambs. By putting wire cloth on the outside of the window frame you are secured against mice or rats even though the sash be removed, as will be found pleasant and healthful in warm weather. For cold weather a double sash, i. e. one inside the other and a few inches apart will insure a warm cellar, unless too much of it is above ground. As a general rule three-fourths of the cellar should be under ground to insure against frost in very cold weather. An inside as well as an outside entrance should be made, for obvious reasons, and in exposed situations the outside entrance should have, not only an inclined cellar door, as is usual, but in addition, an inside one hung to the jamb formed by the cellar way and the main cellar wall; forming in this case, as well as in that of the double sash, what are known as dead-air spaces or chambers, the philosophy of which is too well known to need an explanation here. The cellar wall should not be less than 18 inches in any case, as less than that is apt to give way from pressure of earth outside, and is not of sufficient thickness to keep out the cold. We have now spoken of the most important items in the construction of the cellar. W.

[TO BE CONTINUED.]

[Written for the Valley Farmer.]

CULTURE OF TOBACCO.

Land for raising tobacco should be broken up in the month of January in order to allow the frost to kill the worms and insects deposited there, which will be very injurious to the tobacco crop if allowed to remain in the earth undisturbed. The ground should be cross plowed about the last of April or the first of May, and well harrowed, and the rows layed off each way, from three to three and a half feet apart, according to the strength of the land; the richer the land the less distance the rows must be apart. After laying off the rows, hills should be made where the rows cross each other. The hills should not be elevated much above the surface. When the plants are large enough and the earth sufficiently moist draw them out of the bed and transplant the young tobacco in the hills which have been prepared for them—one plant in a hill. In a week after transplanting in old land, the ground will generally be covered with weeds, rendering it necessary to plow it out and scrape the weeds off the hills. In another week you must plow it out in an opposite direction, again scraping the weeds from around the plants and replacing the earth where the plants are too much deprived of it. In about a

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week or two you may plow it again, but at this plowing you must draw the earth to the plant, forming an elevation around it; and in a week or two repeat this process, and then the tobacco will need no more plowing or hoeing. But the next thing it will need will be topping, which is done by breaking off four or six leaves next to the ground, and breaking out the top of the plant, leaving 8, 10, or 12 leaves, according to the fertility of the soil. Until it will bear this process it is not large enough to top. In about a week after topping, suckers will make their appearance, and must be removed once a week, or as often as they appear. The tobacco must be wormed once or twice a week, according to the prevalence of these pestiferous insects.—They must be diligently kept off, or they will ruin a tobacco crop in a few days. After it has been wormed and suckered five weeks, it is generally ripe. When ripe it is covered with yellow spots or dapples, and the surface of the leaves is more uneven than when green. As soon as it is thoroughly ripe it must be cut, and permitted to wilt before hauling it. I prefer cutting in the evening and hauling in the morning to the barn, where I hang it on sticks and place it on a scaffold in the barn, putting the sticks as close together as you can press them, and allow them to remain together until they are quite yellow. Then hoist them up into the barn, placing the sticks about six or eight inches apart on the tiers, according to the size—small tobacco close together and large tobacco farther apart. As soon as you have hoisted it, kindle a moderate fire under it until the leaf begins to cure; then increase the fire by kindling log fires, which are the best kind of fires to cure tobacco, because they burn with a strong, gradual heat, which is the best sort of heat to cure tobacco properly. When the leaf is cured the fire may be discontinued; but if the weather should be damp, in a few days after the fires have been discontinued, they may be renewed until the tobacco is dry, when they should be discontinued again. Three or four weeks after the fires have been discontinued the tobacco is sufficiently cured to strip, which is done by pulling the leaves from the stalk and binding them with another leaf. When I am stripping it for delivery at the Stemmery I put from 20 to 30 leaves in a bundle, but when I am stripping it for prizing purposes I put about six leaves in a bundle. At the end of each day I hang up what I have stripped that day, if it is not in good order for prizing or packing down, to let it get in good order for prizing or packing as the case may be. As soon as it will bear the pressure of

the hand without breaking stem or leaf, it is in suitable order for prizing, but it may be suffered to get a little softer when intended for the stemmery. The mode of packing down is very simple, therefore does not need much explanation, if any.

M. W. ADCOCK.

Clarksville, Tenn.

[Written for the Valley Farmer.]

THE STEAM PLOW.

PETTIS Co., Mo., Feb. 7th, '56.

MESSENGERS EDITORS.—I have read in a late paper a notice of the "Locomotive Steam Plowing Engine," invented by Mr. Obed Hussey, of Baltimore, which was exhibited at the last Maryland State Agricultural Fair.

The trial made of its adaptation to plowing, by attaching four large plows, each 14 inches wide, breaking a breadth of 4 feet 8 inches, was not only a novel but a most interesting spectacle, to every enterprising farmer. If it should prove equal to the high opinion formed of it by those who witnessed its trial, who can estimate the importance of the invention to the prairie portion of our country. I say the prairie portion of country, for although it may be brought into partial use in other portions, it is to the prairie lands it is especially adapted.

One steam plowing engine, moving 30 miles per day, cutting and turning a breadth of 5 feet, would break *eighteen acres of sod per day*, thus performing the labor of *nine ox teams*—each team consisting of four or five yoke, and saving the labor of several hands. Is there *now* any more reason to *doubt* that a steam plowing engine can be made to perform the work above specified, than there was forty years ago, to doubt that a locomotive could be made to run upon a railroad, at the rate of 30 or 40 miles an hour, drawing after it an immense load of freight? Would it even be as great an improvement on the present mode of plowing, as the mowing and reaping machine is upon the use of the sickle and scythe?

I hope ere long to know that the "Locomotive Steam Plowing Engine" has been introduced upon the prairies of Missouri. If you have it in your power you may render essential service to the farmers of the West, by bringing to the attention of Mr. Hussey, the importance of an early introduction of his engine upon our prairies, and of exhibiting it at our State Fair.

We would like to know more about it. What is its cost? what its weight and power? what its daily consumption of fuel? and whether wood or coal, or either? and other points pertaining to its ability and usefulness. T. F. H.

Stock Raising Department.

PREPARING FOOD FOR FARM STOCK.

In the January number of the *Valley Farmer* we gave an article under this head, in which we incidentally alluded to one of the most improved mills for grinding corn and cob meal that we have seen; this has called forth in reply several articles on the subject, from the advocates of, and dealers in other mills. In these articles, opinions upon the subject of digestion are advanced at variance with science and the natural laws of animal physiology.

Mr. L. Bollman, editor of the agricultural department of the *Indiana Journal*, takes the subject up, and in proof of his own opinions quotes Mr. Youatt, and says: "Our authority is best," &c. If our friend of the *Journal* quotes Youatt correctly, he, (Youatt) is certainly in error, as we shall attempt to show; nor is this the only error Mr. Y. has published in his various works on domestic animals. In proof of our argument we will give authority which the scientific world will admit is still better—Dr. Carpenter and Flouren's.

As the preparation of food for economical feeding of farm animals is becoming a matter of great importance to our Western farmers, we will give Mr. Bollman's article in full, and in order to dispose of the question in controversy, we shall answer at length, although it will occupy more space in our columns than we should feel willing to devote to a subject of less importance. The following is what Mr. B. says on the subject:

"The idea here advanced is that corn and meal when eaten by ruminants pass directly to the fourth stomach, unless mixed with coarser food. Will the *Farmer* give us its authority for this opinion? But conceding its correctness, we ask whether the gastric juice of the fourth stomach is not a sufficient solvent to digest the coarse meal of the crushers. We know it cannot act upon the whole grain, because it has no power over the silicious coating of the unbroken grain.

If the corn is ground into "fine meal," can it be chewed any finer? If not, why the necessity of mixing it with cut and moistened hay?

The process of digestion in ruminating animals as stated in these extracts, did not accord with our recollection, but having killed a beef a short time since, to which we had fed corn in the ear, we examined the paunch or first stomach, and found the corn, both the broken and unbroken grains, and the cob, both in pieces and finely chewed, everywhere mixed with the hay and grass which the animal had eaten. If,

then, the corn and cob, after being crushed by the jaws and teeth pass into the first stomach, why will it not after being crushed by the iron teeth of a mill?

We proceed to state what is the true digestive process of ruminants, as the ox, sheep, &c., and our authority is the best, Mr. Youatt.

The throat or gullet, or as it is technically called, the *esophagus*, forms a canal from the mouth to the entrance of the fourth stomach. Along the base of this canal are openings into the first and second stomachs. Immediately under the first opening, is the *rumen* or first stomach. "All the food," says Mr. Youatt, "when first swallowed, goes there to be preserved for the act of rumination, and a portion, and occasionally the greatest portion, of the fluids that pass down the gullet, enter the rumen." In the calf, this opening "instinctively closes by an act of organic life," when it swallows the milk; and it is not the *form* of the aliment or food, or the force with which it descends the gullet, that causes it to pass into the rumen of the older animals.

After being received into the first stomach, the food traverses every portion of it, without being changed, except softened and covered with some mucous, and as it approaches the opening through which it passed into it, it is forced through another opening into the *reticulum* or second stomach. The *Valley Farmer* says that it does not enter this stomach until it is chewed the second time, upon what authority we do not know. The office of the second stomach is to force the food back through the opening into it, into the gullet, which carries it back to the mouth, to undergo the second chewing, or as it is called, chewing the cud. In the process, it is thoroughly masticated, and being again swallowed, it passes into the *manipulus*, or third stomach. The business of this stomach is to reduce the food to a pulp, in which form it passes into the *abomasum* or fourth stomach. This last one secretes the gastric juice, which digests the food by its chemical action, and converts it into *chyme*.

The gastric juice, as we have observed, does not act on the thin outer covering of the grain of corn. Hence if it reaches the fourth stomach whole, it will not be digested, but must be evacuated whole. If it is broken, it will be digested, unless taken in such large quantities that there is not enough of gastric juice to dissolve it. Every feeder knows that many grains are not broken in process; hence the use of mills to aid mastication. If these mills leave the meal with "sharp and flinty corners," so does the crushing operation of the teeth. This we know from what we observed in the paunch we examined. But these sharp corners are softened, they are covered with mucus and are dissolved by the gastric juice, and cannot, therefore produce that intestinal derangement spoken of by the *Valley Farmer*. Improper feeding, colds, or other causes, produce them—if not, then long since would the feeders, who used crushers, have seen the deleterious effect of the sharp cornered meal.

The only grinder which the Editors of the *Farmer* have seen, that will grind corn and cob

meal fine enough, is that of Mr. Straub of Cincinnati. They qualify this expression with the phrase "*at one operation*," but what it means we cannot tell—whether at one handling or but one grinding. Have they seen *Felton's Portable Mill*? It grinds superfine flour, and superfine meal too; so fine that a dozen mastications could not make it finer. So we challenge you Mr. Farmer, with a *Felton* against your *Straub*; the contest to come off at our next State Fair, which as it has thrown open the premiums to be contested by every body, will be an inducement for Mr. Straub "to be and appear."

The writer after conceding our first proposition, asks: "whether the gastric issue of the fourth stomach is not a sufficient solvent to digest the coarse meal of the crusher." To this question we would first reply, that experience and observation around the barnyard where this meal has been fed, emphatically answers No. But a more conclusive answer is found in the wisdom displayed by the Divine artist in providing the animal with that complicated and beautifully arranged digestive apparatus, no part of which has been formed in vain. Gross food when given to a ruminant in a form that prevents it from passing through all the various processes of digestion cannot be fully prepared for perfect assimilation. The changes which the fluids secreted by the various departments of the digestive apparatus produce on alimentary matter, is by solution and chemical action. Now digestion cannot be perfect unless the food is given in such a form as to force it to take that course in its downward passage as will cause it to pass through all the various forms of digestion, each of which contribute their proper fluids to prepare it for the perfect action of the next.

The first process towards digestion, is mastication; this is not merely to crush the food and reduce it to a pulpy state, but also to imbue it intimately with saliva. Saliva, so abundantly secreted by ruminants while chewing the cud performs an essential part in the process of digestion, being in fact the chief agent in the conversion of starch into sugar, or in other words, its digestion. Modern researches have shown, as fully set forth by Dr. Carpenter in his *Human Physiology*, that it is by this fluid, and not the gastric juice, that the amylaceous elements of food are prepared for assimilation.—The change which commences in the mouth, is in a great degree suspended in the stomach, to be renewed when the food passes into the *duodenum* (or first bowel) where it is mingled with the pancreatic juice, a fluid closely resembling saliva in its properties. Hence the necessity

for thorough mastication; hence the advantage of mixing the meal with the hay or straw, which secures its passage into the paunch, or first stomach, and its consequent rumination. When the corn and cob is merely crushed in the iron mills, referred to by us in our former article, it is too coarse and heavy to adhere to the wet hay or straw to be swallowed with it. And when fed unmixed in this form, or when ground into fine meal and fed either dry or in water in the form of slop, it is not of the *mechanical consistence* which will cause it to open the passage into the first stomach, but passes directly along to the fourth or true stomach unprepared for the final act of digestion and assimilation, just as the milk does in the case of the calf, which comes from the mother already prepared for the final action of the stomach. What are the circumstances which determine the direction of the food? Dr. Carpenter, (*Princip. Physiol. Gen. and Comp.*) thus describes them: "When the food is first swallowed, it has undergone but very little mastication, it is consequently firm in its consistence, and is brought down to the termination of the esophagus in dry, bulky masses. These separate the lips of the groove or demi-canal and pass into the first or second stomachs. After they have been macerated in the fluids of these cavities, they are returned to the mouth by a reverse peristaltic action, the food being shaped into globular pellets by compression within a sort of mould formed by the ends of the demi-canal, drawn together. After its second mastication, it is again swallowed in a pulpy semi-fluid state; and it now passes along the groove which forms the continuation of the esophagus, without opening its lips, and is thus conveyed into the third stomach, whence it passes into the fourth. Now that the *condition of the food, as to bulk and solidity, is the circumstance which determines the opening or closure of the lips of the groove, and which consequently regulates its passage into the first and second stomachs, or into the third and fourth*, appears from the experiments of Flourens, who found that *when the food, the first time of being swallowed, was artificially reduced to a soft and pulpy condition, it passed for the most part along the demi-canal into the third stomach, as if it had been ruminated—only a small portion finding its way into the first and second stomachs.*"

Now, as we have before intimated, if the amylaceous food passes without mastication into the true stomach, it lacks, not only the condition but an important element necessary to its digestion—the saliva, and consequently the di-

gestive process cannot be so perfect. In all probability the fluids secreted by the paunch, which permeate the alimentary mass, also takes some part in the changes requisite to its assimilation. That there is a necessity in the case of the cow and other ruminants, for the food being temporarily lodged in this great receptacle, is sufficiently proved by the fact that the provision for it exists. The calf requires no such provision, because its food being of a different character, is digested by the gastric juice, and not by the saliva.

Our friend further asks: If the corn is ground into fine meal can it be chewed any finer? If not, why the necessity of mixing it with cut and moistened hay? We think in what we have already said, these questions are, or should be very satisfactorily answered. But we will give a further reason: The finer the grain is ground the greater surface is presented to the immediate action of the fluids of the digestive apparatus. Any soluble substance is more readily acted on when finely pulverized, than when in a solid mass. We have now given our authority for the statements made in our former article, and have answered, we think satisfactorily, the question why it is necessary to mix "fine meal with cut and moistened hay." No doubt some portion of the corn when fed in the ear will pass into the first stomach for the same reason that other coarse food does. An error of our friend of the *Journal*, has led us to detect an inadvertence in our account of the digestive organs of the ruminants. The office of the "second stomach," is not, as he states, to force the food back "into the gullet," but to hold the water necessary to macerate the food. "The liquid swallowed," says Dr. Carpenter, "seems to be specially directed into the second cavity, the *reticulum*. It is here that the peculiar provision of 'water cells' is found, for which the camel has long been so celebrated, but which exists in a greater or less degree in all ruminants. These cells are bounded by muscular fasciculi, by the contraction of one set of which their orifices may be closed and their contents retained; whilst by that of another set, the fluid they contain may be expelled into the general cavity of the stomach."

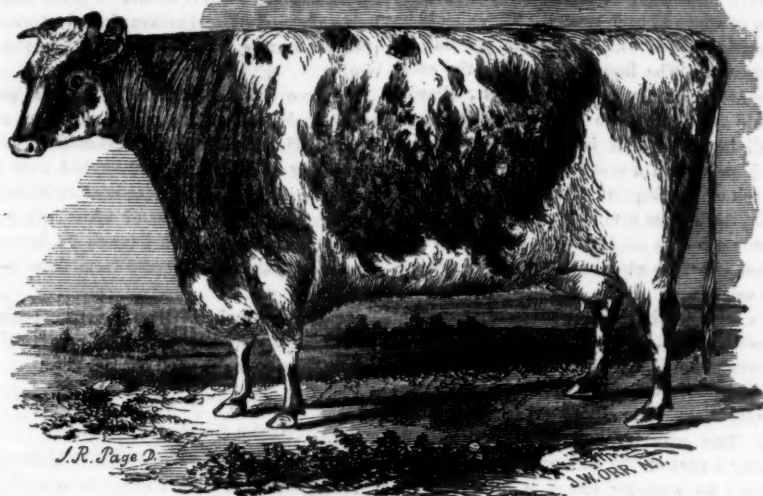
It is said that "necessity is the mother of invention." We happen to know that Mr. Straub run for a long time, a corn and cob crusher by the steam power used in his establishment, the meal was fed to cattle and horses, but it was ascertained that the irritation and disease to which we referred became quite common among the animals fed upon it. He then run the

crushed corn and cob through the burr mill, and reduced it to "fine meal;" but this required extra labor, to save which, Mr. Straub directed his inventive powers and produced the mill which does the work at *one operation*; and as our friend of the *Journal* desires light on this subject, we will briefly state that there are two heavy circular plates of steel, encased within an iron covering, around the spindle; one plate is stationary and the other revolves with the spindle; they are so adjusted that they act like a pair of shears and cut and break the cob into short pieces as the ears are passed into an opening like that of an ordinary corn sheller, these pieces fall directly between the stones and are ground fine.

In the May number of the *Michigan Farmer* for 1855, we learn that one of the editors of that paper, after feeding corn and cob meal for two months to his cattle and horses, discovered the irritating effects of the food upon one of his horses, and writes to Dr. Dadd, and alludes to the case as follows:

"For the purpose of testing by *actual trial*, the value of corn and cob meal, after removing upon our farm we procured a supply at once. Commenced with a full feeding the first of January last, and continued two months, giving to horses and cattle. After a month's feeding, febrile symptoms were occasionally observed in one of the horses, such as short and quick breathing, full pulse, inflamed feet, fatigue from light exertion and sweating at the breast. At the end of two months, nearly, these symptoms were greatly aggravated; the appetite failed, and the animal lost flesh. Though well satisfied as to the irritating cause, a note was dispatched, containing a short account of things, to our very obliging friend, Dr. Dadd, of Boston, and requesting his opinion on the feeding qualities of corn and cob meal."

In conclusion we will state that we have no pecuniary interest in the manufacture or sale of Mr. Straub's or any other mill, but we deem it not only our province, but our duty to recommend to the farmers the best machines and implements that are offered to the public, as well as to give the best modes of cultivation, &c.—This we shall aim to do independently, candidly and honestly, and at the same time when we deem it proper, expose humbuggery and fraud wherever it exists. We must therefore decline the challenge of our Indianapolis friend to take part in the contest "with a Felton against a Straub." If we have seen the Felton mill it was but for a moment, and we know nothing of its construction or its merits. If its grinding surfaces are of metal, when new it may grind as fast as the burr or Straub mill, but we are quite sure it is not as durable, nor can it be as readily sharpened by an ordinary farm hand as the burr stones can. But we are for *improvement*, whether in a Straub or a Felton, and we shall be ever ready to chronicle it wherever it is found. **IMPROVEMENT** is our motto.



ZEALOUS.

Owned by Alexander Waddle, South Charleston, Clark County Ohio.

Roun, bred by John Wilkinson, Nottingham, England; calved March 18th, 1850; got by St. Albans (7462,) out of Zeal, by Roman, (2561;) Roguery, by Mercury, (2301;) Pageant, by Monarch, (2324;) No. 13, by St. Albans, (2584;) by Jupiter, (342;) by Sir Oliver, (605;) Raspberry, by Trunnel, (659;) Strawberry, by Favorite, (252;) Lily, by Favorite, (252;) Miss Lax, by Dalton Duke, (188;) by R. Alcock's Bull, (19;) by J. Smith's Bull, (608;) by Jolly's Bull, (337).—[American Herd Book.

CHEESE MAKING.

It is difficult to describe the art of making good cheese so that an inexperienced person can be successful. It is an art requiring experience for success. It depends upon so many nicely performed processes that much experience is requisite to be certain of a happy result.

RENNET.—The first thing to be secured is good rennet. Many things have been used at different times and in different countries to bring the curd, such as vegetable acids, vinegar, the juice of the fig or thistle, a decoction of the dried flowers of the artichoke, and sometimes the pigs bladder. Almost anything containing an acid will produce the required result. But the experience of ages has decided that nothing yet discovered is so good as the stomach of the calf properly prepared. The stomach is best when it is young and has never digested anything but milk. It injures the stomach for rennet, to feed the calf with any other food than that it gets from the cow. Care should be taken on this point.

A judicious writer says: "When fresh, the membrane of the calf's stomach is insoluble in water, but when it is salted and kept for several months exposed to the air, a portion of its

surface is decomposed and becomes soluble. It is this soluble, decomposed, or more properly, decomposing membrane, which is the active principle in rennet. It is a solvable, highly nitrogenous substance, having its elements in a disturbed state, and therefore highly effective in producing change in the elements of other bodies with which it is brought in contact. In preparing rennet, we have to check the natural decomposition of the stomach by the use of salt, otherwise it would communicate an unpleasant flavor to the cheese, but at the same time keep the salted stomach long enough to permit its elements to become disturbed by the atmosphere. In Cheshire, England, the skins are cleaned out and packed away with salt in an earthen jar till the following year. They are taken out a month before use, stretched on pine sticks, and dried. A square inch of the skin for each 15 or 20 gallons of milk is soaked 24 hours in a solution of luke warm water and salt and the whole poured into the milk and well stirred. In Gloucestershire the cleaned stomach is salted, pickled and dried, and when at least a year old, it is well sodden in salt water, a half pint of which is sufficient to coagulate 50 gallons of milk. In the dairy districts of New York, the stomach is

emptied of its contents, salted and dried, without scraping or rinsing, and kept for one year. It is then soaked for 24 hours in tepid water, a gallon of water to each rennet. They should be frequently rubbed and pressed to get out all the strength. The liquor containing the soluble rennet is then saturated with salt, allowed to settle and strained to separate the sediment and all impurities. It is then fit for use. It should be kept in a stone jar in a cool place. As much of the Liquor is used each morning as will set the cheese firm in about 40 minutes." The stomach thus used may be dried again and exposed as before when another portion will become soluble.

This is probably the best mode of preparing and using rennet.

SETTING THE CURD.—The milk to be used, should be put into a vessel so that it can be conveniently warmed to about 80 or 85 degrees, Fahr. This may be done in many ways, by warming a part of the milk and pouring it into the rest; by warming water in a large kettle and setting the milk vessel into it; or by setting the milk in a kettle that may be conveniently warmed. In large dairy districts there are heaters, stoves, steam pipes and water currents by which the milk is slowly and properly warmed. It should not be too warm when the rennet is put in, not much above milk heat. The curd should set firmly in about 40 minutes, the temperature being slowly increased till the curd and whey are about 100 Fahr. When the curd is well set it should be cut up into small parcels so that the whey may readily separate. The whey should be dipped off. In large dairies a lattice frame work set into a sink with a coarse cloth spread over and the curd and whey poured on, so as to let the whey run off, greatly facilitates the process. After the whey is separated and run off, a little cold water should be poured on to the curd to keep it from packing. Some prefer to cool the whey and curd together before they are separated by putting cold water around the vessel. When the whey is all drained off and the curd cooled, it should be finely broken up and salted. It is perhaps as well to press the curd an hour or two with a slight pressure previous to salting, that the whey may be pretty much all driven off. It should be broken very fine before salting.

PRESSING.—When it is salted it is ready to be put into a strong cloth and put into the cheese-hoop for pressure. It should be slowly pressed at first for six or eight hours. Then it should be taken out and pierced with a wooden knife in several places to let the remaining whey pass

off. Then it should be put into a clean cloth and returned to the press for a heavy pressure for 12 hours. Then it should be taken out, put into a clean cloth and returned to the press and pressed heavily till it will no longer wet the cloth.

KEEPING CHEESE.—After the cheese is pressed it should be kept in a cool, clean place away from all flies and insects. It should be turned every day on the shelf and rubbed over with butter or lard. Good cheese is often injured by not being well taken care of after it is made. Large cheeses sometimes have to be bandaged with strong cloth to preserve them from breaking open.

These hints and a little judicious experimenting will enable any person of practical sagacity soon to make good cheese. *

[Written For the Valley Farmer.]

Bloody Murrain—Its True Cause.

MESSES EDITORS:—I noticed in one of your back numbers a treatise upon "Bloody Murrain" in cattle, as also a prescription for its treatment. Having mislaid the number, I am unable now fully to recollect the names of the authors.

The raising and feeding of horned cattle having been rather a hobby with me for the last twenty years—having owned more of them than a Pike county man could count before breakfast—and having lost enough of them to respectably set up a young man, well to do in a new country, I feel entitled to say, with some degree of authority too, that the theory of Mr. Brown, in which he assigns "the feeding upon wild grasses" as a cause for this disease, is utterly baseless and not supported by my experience, and also that the "decoction of oakbark and alum," recommended by Mr. Jones as a cure, will be found entirely unavailable.

From the commencement of my cattle raising, to within the last three years, I had been unable to solve the mystery of this disease—to account for the fact of cattle of all ages and conditions of flesh, in every locality and at every season of the year, alike being attacked, and in 48 hours after, killed by this mysterious disease, but about three years since I believe I discovered the true cause of the previously mysterious "bloody murrain" under the following circumstances. About that time having lost a milch cow by the bloody murrain, a young gentleman then reading Anatomy at my office, proposed a post-mortem examination of the animal, which he himself, I believe, conducted. Some days after he reported to me, as the result of his labors, that the

viscera were found in a healthy condition, and without any perceptible traces of morbid action. But strange to relate, that he had extracted from the liver, two leaches which he considered the cause of the disease. The same year I also lost a fine-spayed heifer, in fine order and high flesh, which fell a victim to the same disease. On this occasion, before the animal heat had left the carcass, I had the hide taken off, and the total contents of the cavity removed, for an examination of the stomach, smaller intestines, lungs, liver and kidneys.

Having been bred to the medical profession in early life, with perhaps a pretty thorough knowledge of comparative anatomy, I conceived that I might perhaps be better able to "look up" the hidden cause of this fatal disease with more facility than many other equally intelligent men who had not been possessed of such knowledge.

The result of my investigation, like that of my young friend's was the discovery of the leach in the liver, with this only difference, that he discovered two leaches and I one, in our respective subjects.

The one which I found in the heifer's liver was a very large one—large enough indeed to have killed Barnum's big elephant, had he enconced as securely in his liver, as I found him in the heifer's.

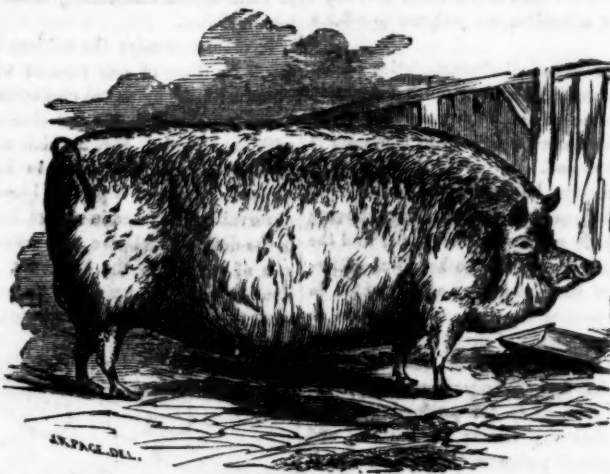
I would therefore suggest that the *cause* of the bloody murrain, is the *presence of leaches in the liver*.

As for the curing of this disease, I think it evident the only possible cure is to kill the leach, which can only be effected by killing the animal in whose liver it is found—in other words, I believe it to be incurable—unless indeed it may be accomplished as the dutchman cured his dog of sheep-stealing, by chopping off the animal's tail, just behind his ears.

I do not see either how it can be prevented, for I would add here, that through the pasture in which those cattle grazed there meandered a considerable branch, and on turning over the stones at one of its ripples, I found a few leaches in the stream. It is said however that *geese seek for and feed upon them with avidity*.

WM. McCLEURE.

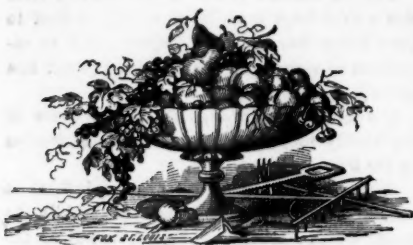
Waverly Place, Mo. March 10, '56.



"LORD WENLOCK," OWNED BY L. G. MORRIS, N. Y.

WINNER OF THE 1ST PRIZE IN HIS CLASS AT N. Y. STATE SHOW IN 1853.

The modern Suffolk is a valuable and popular breed. Its origin was a cross of the ancient breed of Suffolk (England) with the Chinese and Berkshire. Youatt says, "on the whole, there are few better breeds in the kingdom than the improved Suffolk." Martin says, "this breed stands first;" and Rham says, "Suffolk pigs are perhaps, on the whole, the most popular breed in England." It differs from the Essex in making more fat and less lean, being better adapted to barreling, and not so good for baconing or as fresh pork. The Suffolks attain maturity at an early age, and may always be in condition to kill from the time they are a month old. Their weight is from 200 to 300 pounds at 10 or 12 months old. The carcasses command a considerable extra price over the common hogs of the country, partly on account of the greater weight in proportion to the bone, and partly from the pork being of better quality and flavor.—[Ohio Cultivator.



Horticultural Department.

CULTURE OF THE STRAWBERRY.

The Strawberry is the earliest and most delicious of all the garden fruits, and as easily raised as any other, and yet there is not one in ten of our rural population who cultivate it; and of the number who do, comparatively few give it the attention that its merits demand.

To those who fully understand its character and mode of cultivation, our often repeated instructions may appear commonplace; but for the benefit of those who are, for the first time, giving it their attention, we propose to offer a few hints.

The peculiar botanical characteristics of the Strawberry plant have caused much discussion among the gardeners and amateurs of our country, and yet its seeming anomalous character is not fully understood.

The Strawberry, botanically is not classed among the *dioecious* plants, that is, plants having *stamens*, or male organs on one plant, and the *pistils* or female organs on another; but different varieties of the Strawberry as cultivated in our gardens, possess the two several organs in a greater or less degree of perfection. Some of these having both organs in the same flower so nearly equal that they are termed *perfect* flowers; in others the stamens so far predominate over the pistils, that the variety is barren, and hence for practical purposes it is called *staminate*; in others the stamens are so deficient that the plant will not produce fruit unless grown in the vicinity of other plants possessing fully developed stamens, and is therefore called *pistillate*; although we have never closely examined one of these pistillate plants in which the rudiments of the stamens could not be discovered. Between these classes of plants there are varieties possessing both organs in every proportion from those denominated *pistillate* and those classed *staminate*. There is another fact connected with this subject, not clearly understood: Some of

the varieties classed pistillate, under certain circumstances and in certain seasons, will have the stamens so far developed as to render the plants fruitful without the aid of other plants as fertilizers, while in other seasons the same plants will be perfectly abortive, unless fertilized by neighboring plants.

In England, where the Strawberry is grown to great perfection, so far as we have been able to learn, this distinction is not observed, but the varieties cultivated possess both organs so nearly equal as to be fertile when alone. We are therefore led to the opinion that the Strawberry naturally is endowed with perfect flowers; and in the moist, cool climate of England both organs are fully developed; while in the United States, and particularly in our Western climate, where the season advances so rapidly that the blossoms hardly have time for full and perfect development before the season of impregnation is past.

From long experience in the cultivation of the Strawberry in the West, it is found that the most productive varieties are those having small blossoms and almost totally deficient in stamens or male organs and usually denominated pistillate varieties.

In order to render the subject clearly understood by those of our readers who are not familiar with the botanical character of the Strawberry, we illustrate the two classes of blossoms with engravings. Fig. 2 which we lay down a *staminate*, will also serve to illustrate what some writers term a perfect blossom; the only observable difference in nature, between the two is the different relative proportions of the two sets of organs in the blossoms. For illustration and for all practical purposes we shall treat this whole class as *staminate*.



Fig. 1.

Fig. 2.

Fig. 1 represents the *pistillate* flower, and the little yellow tuft, *a* in the centre, is the female part, and is composed of a parcel of short, minute fibres, equal in number to the embryo seeds, and each extending to the ovary or seed vessel beneath.

Fig. 2 represents the *staminate*, or small flower; the centre, *a*, is the female part, as in Fig. 1, and the little *filaments* which surround the pistils, or female part and extend outward as at *b*, is the male part of the blossom. At the end of each of these little *filaments* are lit-

tle heads or balls called *anthers*. These anthers are filled with a minute dust or powder called *pollen*. At the period of perfection of the flower, the anthers burst, and the pollen is scattered by the wind, or carried upon the legs of flies or other insects and comes in contact with the pistils and impregnation or fertilization is the result. The precise mode in which this is consummated it is not important here to explain; but without the contact of the pollen with the pistils, there would be neither seed nor fruit. The fruit, or pulp, serves merely to contain the seed.

It will be observed in the season of flowering the bees and small insects are busy in gathering the honey and pollen from the flowers, and it is supposed that it is chiefly through the agency of these insects that the impregnation of the flowers is produced.

In the vine family, such as the pumpkin, melon, cucumber, &c., there are male blossoms, (by some called false blossoms) and others again on the same vine which are attached to the rudimentary fruit, and when the flowers of these expand the bees are always busy in flying from one to another and are instrumental in fertilizing the flower, and at the same time collecting the pollen upon their legs which is deposited in the bee cells and is then called bee bread.

In the Indian corn plant, the pollen is produced on the tassel or top, in the greatest profusion, and is scattered by the wind and falls upon the pestils or silk, each fibre of which communicates with an embryo grain and is thus fertilized.

In the blossom of the apple, peach, pear, plum, &c., both of the sexual organs are perfect in the same blossom.

In order to grow the Strawberry in perfection and in the greatest quantity, it is important to procure some of the best pistillate varieties; these should constitute the principal bearing plants, and in their vicinity should be planted a small proportion of staminate plants.

The following are among the best pistillate varieties: McAvoy's Superior, Neck Pine, Hudson, Hovey's Seedling, Burr's New Pine. The best staminate varieties are Longworth's Prolific, Early Scarlet, Iowa.

McAvoy's Superior is the variety to which the Cincinnati Horticultural Society awarded a prize of \$100 as a seedling superior to any of its class as a market fruit. It is rather a tender berry, but we regard it far superior to Hovey's Seedling or a Hudson in every other respect.

Neck Pine.—This is one of the most hardy varieties that is grown; it is suited to all soils,

and is neither injured by heat or cold; it is so vigorous and hardy that it requires some care to thin out the vines. When properly thinned, we have found it the most productive variety that we have ever cultivated. Flavor excellent, and although too soft for a market fruit, it is one of the best kinds to preserve in sugar, or put up in cans, as it retains its form better than some of the firmer kinds.

Hudson—is the old market variety of Cincinnati. It is a firm, high colored berry, but not so rich for the table as other kinds.

Hovey's Seedling.—This is a large fruit, and in some localities it bears large crops. Last season it fruited better than we have ever before known it. Flavor not first rate. On light soils the vine is liable to die out.

Burr's New Pine.—This is a seedling which originated in Ohio. In flavor it is not excelled by any other variety. Unless grown on rather a heavy, loamy soil the vines burn out. It is not a great bearer.

Longworth's Prolific is a seedling from the same planting with McAvoy's Superior. Its blossoms are what some call perfect, but which we class with the staminate varieties, and serves well to plant with the other kinds. It is a good bearer for the class.

Early Scarlet.—This variety also bears well, while it also serves as an excellent impregnator. Fruit medium size and of good flavor.

Iowa is one of the best fertilizers, and sometimes bears fair crops.

The Strawberry will thrive well on almost any garden soil, but a light, sandy soil is not so well suited to some varieties. If poor, it should have a good dressing of woods earth. Stable manures should not be used unless well decomposed and entirely free from seeds.—The ground should be well and deeply plowed or spaded, and harrowed or raked fine. The pistillate plants may be set in rows two feet apart, and one foot apart in the row. If it is desired to cultivate them in beds, two rows are sufficient in a bed. Two beds of two rows each may be planted, and then a row of staminate plants should be set at least six feet from the pistillate plants. The runners of the staminate or male plants should never be allowed to extend and take root in the bed with the pistillate plants, because most of the staminate varieties being less productive of fruit and consequently send out more vigorous runners, and will soon take entire possession of the bed, to the exclusion of the pistillate varieties. It is also important to keep them separate so as to select the varieties with certainty for forming new beds.

The first season after the plants have been set, they should be well hoed and the ground kept clean and mellow for the new runners to take root. By fall they will entirely cover the ground. In the fall the beds should have a light covering of old tan bark, or leaves. The following spring the plants should be thinned by hand, or with a hoe, to about three to six inches apart. This method will produce the largest crops with the least labor; but to grow the largest and best flavored fruit the plants should be set in beds about twelve or eighteen inches apart both ways and never be allowed to spread. To cultivate them successfully in this way they must always be kept free from weeds and the runners cut off before they take root. This is the English method and accounts in part for the extraordinary size of their fruit.

The best season for planting the strawberry is in the spring, from the time the plants begin to grow until they blossom.

PEACH TREES--PRUNING.

The peach tree has a greater tendency to over bear than any other variety of fruit tree, and unless the fruit is regularly and judiciously thinned in full bearing years, it is small and inferior in quality, and the health and vigor of the tree is impaired by the over-crop. The fruit is always produced on the young shoots of the previous season's growth. To remedy the evils of over-bearing, and to maintain the tree in a healthy and productive condition and in a proper form, Mr. Downing recommends to cut off *half of the length of the last season's growth* over the whole outside of the head of the tree. This, while it improves the form of the tree, is the best and cheapest method of thinning the fruit. It is well known that if a tree is left to grow and bear full crops without proper pruning, the branches will become long and slender, and often break under their weight of fruit.

This shortening-in system, as it is termed, is more particularly applicable to those sections of country where the peach crop can be depended on annually with a considerable degree of certainty. But in our climate we hardly average a full crop oftener than two years in five. It is frequently the case that the prospect of a full crop of peaches is good until the first of May, when a frost comes and the crop in part, or the whole is destroyed. If the shortening-in has been done at the proper time (February or March) and a frost afterwards occurs, the fruit may be sufficiently thinned without the pruning, but should it be entirely killed, the form and

constitution of the tree would be improved by a more severe pruning.

In a full bearing year there is comparatively a small growth of wood, the vigor of the tree being mainly expended in maturing the fruit, but when the fruit is killed one year, or two years in succession, there is an over-growth of wood, and this being mostly at the ends of the leading, or upward branches, while the young shoots in the interior of the head of the tree die out. This constant extension of the main limbs cause, many of them to break under the first full crop of fruit the tree bears, either entirely destroying the tree or greatly impairing its beauty and symmetry.

The method we propose is this: If the fruit buds are uninjured at the proper time of pruning, cut off or thin out, say one-third of all the branches throughout the head of the tree, removing nearly or quite all of the wood of the two preceding season's growth. The following year these will be supplied with a strong and vigorous growth of young fruit-bearing shoots for the next season. The next winter or spring, cut off in the same way another third of the branches, and so on the next year, renewing the fruit-bearing wood, and keeping the tree within convenient limits, increasing the size and growing strength to the main branches of the tree so liable to be broken by their weight of fruit.

In adopting this system of pruning in the early age of the tree it is easily performed, and will cause the fruit to be produced nearer the ground, where it can be more conveniently gathered, and with much less liability to injury from falling.

The past winter has been one of extreme severity, but to what extent the peach trees have suffered injury cannot now be fully determined. Last season was a favorable one for the full maturity of the wood, and there had hardly been sufficient warm weather previous to the severe cold to cause the buds to swell. We therefore infer that the trees on elevated situations were in the best possible condition to withstand the cold, but the fruit-buds are undoubtedly all killed, and in many instances the branches also. It is not however, always so much the extreme cold that produces the injury in fruit trees, as it is the sudden thawing, caused by a bright sun immediately succeeding the extreme cold.

In order to promote the health and vigor of the tree, and to cause an entire new growth of the fruit-bearing wood, the trees should have a very general and thorough pruning. If the branches have been killed, or materially injured

by frost, the wood when cut will present a yellowish brown appearance. If the bark is green and without a dark shade near the wood it is still alive and will grow, although the wood may be so badly frozen as to be entirely dead. If this is the case, the whole head of the tree should be cut back according to the extent of the injury, and at least the growth of the two last seasons. This will require some labor, but it will be more than repaid by the improved form of the tree and its increased fruitfulness. If the injury from frost has been considerable, unless the branches are removed, the growth will be sickly, and the trees prove of but little value hereafter.

We have known the wood of peach trees in the nursery, and those that have been set but a year or two in the orchard to be entirely killed, while the bark retained its vitality and put forth its leaves and made a considerable growth the following year, encasing the dead wood with a new growth. In a year or two the old wood would entirely decay. Although these trees will grow and bear fruit, they are never strong and vigorous, and finally die prematurely.

The shaping of a tree should commence when first transplanted from the nursery, and if it has been allowed to throw out branches more than three feet from the ground, it should unhesitatingly and unsparingly be cut back to a naked stem not over three feet high. Vigorous shoots will be thrown out the first season, which if thinned out and cut back the following winter, a full, round, open, symmetrical head will thus be formed, which will always be under the control of the cultivator to keep it in any desired shape. By pursuing this course the peach tree will not be set back, for but few trees require as much severe and constant pruning as this, and no tree repays with abundant crops so much careful attention. The peach treated in this way, will never require the use of the saw or hatchet in pruning—a good sharp knife will be sufficient to keep it “in trim,” and the annual or semi-annual pruning will afford pleasure and relaxation instead of the manual labor and hard work necessary to remove large limbs. In orchards that have been neglected for several years, it is frequently necessary to remove and cut back large limbs, in order to give the head of the tree the desired shape and to bring it into a healthy, bearing condition. This however, should be done with great caution and judgment—removing not more than one-third of the large branches in one season. In pursuing this course old trees may be entirely renewed in about three years.

[Written for the Valley Farmer.]

OBSERVATIONS ON PEAR BLIGHT.

BY EMIL MALLINCKRODT.

The thrift of the vegetable kingdom depends *mainly*—in many instances *solely*—upon the influence of climate, the nature of the soil being of secondary importance, and in a greater ratio as plants are *perennial*. We may take it for granted, that if the climate is congenial to their natural economy, plants will live in any soil, though they will of course succeed best in that which suits their peculiar wants. If the climate suits, they can be produced on even *adverse* soils to become profitable by artful culture; but if the climate is not congenial, the best of soil is of no avail. Soils may be changed in a degree, but climatical influences with great difficulty. Annual plants have a much wider extent than perennials, because these are subject to its lasting influences, while annuals escape by having their short, suitable seasons. The more plants are the spontaneous production of both soil and climate, the more profitable certainly must be their culture. By far the most unmistakable guides respecting the range of climatical changes, are *plants*, and more especially *perennial* plants. Annual, medium temperature is no guide to adjudge of its influence upon plants—much surer is the knowledge of its extreme range of heat and cold.

To fully understand the nature and economy of a plant, we should hunt it up in its *original native place*, and there *study* carefully its properties and wants. We may take it for granted that *there* it is the spontaneous production of climate, soil (as well to quality as to its elevation above the sea level.) Surface, subsoil, moisture, exposure to sun, shade and winds, should all be taken into consideration. Some plants are very sensible of a change from their native place, while others have the constitutional property to adapt themselves almost everywhere.

The Pear tree is a native of Syria and parts of Asia Minor,—mountainous countries of mild temperature and moderate climatical changes. Thence it spread, centuries ago, to all parts of Europe, and finally to America. The pear tree is a southern highlander by birth, and ranges as far south as the Sandwich Islands in 20 degrees latitude; it thrives well on the same ground with the olive, fig and orange, as is the case in all southern Europe, where the apple tree cannot endure, except at high elevations above the sea. According to Humboldt, 250 feet perpendicular elevation is equal to a full degree farther north—that explains at once, the thrifty growth of northern fruits, cereals and vegeta-

bles under the tropics at great mountain heights, as we witness in Mexico and Central America. The apple is northern in its feeling, and hardly grows well in the U. S. south of 34 degrees, and is altogether harder than the pear. The peach is altogether a southern, and the prune altogether a northern fruit. As an instance of the extreme sensibility to climate, and entirely independent of soil, are European and Asiatic grapes in the U. S., which cannot be grown at all in the open air, while an annual plant, our Indian corn, thrives well through 90 degrees of latitude, 45 on each side of the Equator, also independent of soil. Irish potatoes flourish far north, sweet potatoes far south, no matter whether the soil be sand, clay or light loam. But no plant can possibly ever be acclimated when its constitutional property is unsuited thereto.

In our northern climate the pear tree does tolerably well, but succeeds better in the southern, and but poorly in our middle States, on account of the *blight*, whose cause can only be attributed to *climate* and *not to soil*—to the sudden and violent changes of temperature—changes neither so great nor so sudden north or south of us. The tree is a rapid grower, full of sap and luxuriant of foliage, with thin and smooth bark, illy prepared to ward off violent changes of heat and cold, between two extremes, as is the situation in the middle States. New England, with a lower and steadier temperature, matures the woody fibre, the sap being less in quantity and better in quality, therefore harder and more able to withstand heat and cold. For the same reason the climate in the southern States being milder and more uniform, the tree is healthier. The primary cause of the blight is the sudden transition from heat to cold late in autumn, or early in winter, while the sap is yet in motion; therefore, particularly the exposed bark, which is the conductor of the sap, is unmaturing; also late spring frosts, whereby the already motive sap is suddenly checked. Blight is a symptom of the decomposition of the sap, just what mortification is in animals. The quince being also a southern plant, is fully as subject to the same disease. This and the pear both, when young, are often killed downright by severe frost—what better proof can there be as to the cause of blight? Even the apple tree suffers sometimes by the same cause, though in a less degree on account of its being hardier. Who has ever heard of a prune tree blighting? It does not because of its northern nature—in-sensible to frost. Heat cannot effect pear and quince trees, for they flourish even in tropical climes. The deleterious effects of severe frosts

and sudden transitions of temperature on these trees reach their climax in mid-summer, when vegetation is taxed to its utmost vitality, and then becoming exhausted from the injuries formerly received. That is what some people call fire-blight, which they attribute to the hot sun.

Founded on the foregoing observations, I would suggest the following rules: Plant on high, poor ground; never work or stimulate it by manure, (ashes and lime will do no harm)—cause slow growth, and thereby secure firm, well matured wood; graft low, best on quince stocks, and let the branches grow up from the very bottom; never trim, but shade your trees by their own foliage; summer trimming is the most hurtful; never plant on low, level ground, it is too moist, rich and low for the pear tree,—the higher the ground, the drier and warmer the air—the poorer the soil, the less rank the growth, the less liable to cold, and consequently to blight. I would also try seedlings, which like all other seedlings, are much harder than improved and grafted fruits; as certain as scrub cattle can stand wind and weather and ill treatment much better than highly bred Durhams. The old French settlers succeeded well with the pear tree, as many fine specimens yet show in St. Louis, Cape Girardeau and St. Genevieve, which may be attributed to *their having been seedlings*. All pear trees do better in town, on account of the dry, poor lands on which they stand and the protection they enjoy from cold winds.

St. Louis, February, 1856.

The Peach Borer, or Peach Worm.

This insect is most destructive in spring as it approaches maturity. It will usually be found just below the surface of the ground under the outer bark of the tree, and unless removed will frequently continue to eat upon the inner bark until the tree is entirely girdled, causing it to languish and often die. The appearance of the gum which is always found issuing from the wounds caused by the insects will be sufficient guide to mark their locality. The most effectual method that we have tried, to check their depredations, is to dig them out and kill them. With a gardener's trowel remove the earth where the gum is found, and with a rap or two with the point of the pruning knife, the hollow sound will readily indicate where the work of destruction is going on; here an opening in the bark should be made and the worm found and killed.

Now is the time for the spring examination. It should also be repeated again in the fall.

[Written for the Valley Farmer.]

The Peach Tree and its Management.

The peach tree requires more care and attention than almost any other fruit tree. As a general thing it has been more neglected. It is universally considered short lived, hence the necessity, supposed by many, particularly large cultivators in New Jersey, for setting out young orchards every four years to provide for the decay of older ones.

Let us inquire into the causes which have produced this general impression, and disabuse the public of this long established error.

In planting peach orchards, the universal custom prevails (with but few exceptions) of putting out the greatest number of trees in the shortest possible time. They are then left to take care of themselves. The natural growth being rapid, the branches in a few years, are greatly extended, and, when laden with a profusion of fruit, are wholly unable to bear the burden. The limbs are broken, the trees are seriously injured, and present an unsightly appearance. Each year the fruit grows smaller, until it becomes of little or no value; in addition to this, the continual boring of the grub at the root, and general neglect are the principal causes of making it a short-lived tree. Disappointment follows. The nurserymen come in for a share of abuse for not furnishing trees true to their character. The failure is attributed to other causes than the one that lies at their own door. No one can reasonably expect to have fine trees or fine fruit without proper care and attention. The satisfaction to be derived from having a good supply of this delicious fruit, ought to be sufficient inducement to bestow a little extra labor without grudging.

There seems to be no unwillingness to undertake a much greater amount of labor in various other ways, with far less satisfactory results. A man will work diligently the whole summer in cultivating a ten acre field of corn; whereas, a quarter of that time judiciously employed in horticulture would pay far better. The whole difficulty lies in the fact, that the science of horticulture, particularly in the West, is less understood than any other, save, perhaps, that of agriculture.

What are the facts? How are the trees to be planted, and what their after management?—First, select trees with their limbs growing near the ground. In preparing the soil, (if a retentive clay) trench or sub-soil to the depth of eighteen inches. Mix some well rotted manure, adding a half bushel of wood ashes with the

soil where the trees are to be planted, or dig holes eighteen inches deep and six feet in diameter; excluding the sub-soil, fill in with rich dirt and make it sufficiently high to allow for settling. The only objection to the latter plan is the danger of standing water around the roots. To guard against drought, and insure a luxuriant growth, mulch the roots with coarse litter or spent tan bark, two or three inches in depth. After the leaves have fallen, shorten in the branches at least one-third, forming as near as possible, a perfect head, continuing the process of shortening in, each successive year, cutting out all the feeble and slender shoots. Never suffer the trees to be over-burdened with fruit. Thin it out when very small, and then again when half grown, dividing the fruit on every branch throughout the tree, say four or five inches apart.

To guard against destruction by the peach worm, draw the earth around the trunk of the tree six or eight inches in height in the early part of May. At the top of this little mound the bark will be found too hard for the safe depositing of the egg, which is laid by a long black beetle, about the first of June. In the latter part of summer take the dirt away, remembering to renew it every spring. If this course were attentively pursued, we should hear nothing more about the peach tree being short lived, nor the deterioration of its fruits.

To improve a neglected peach orchard, head in the large branches within two or three feet of the main trunk; exterminate the grub with a sharp pointed instrument; dig a trench around the tree eighteen inches or two feet from the trunk, a foot or more in depth by two in width; fill it up with rich, prepared soil, with a good sprinkling of ashes. A luxuriant growth will follow. Shorten in the branches, thin out the fruit, not forgetting the peach worm as in the directions above stated. He who does this will have the satisfaction of again gathering delicious fruit from trees that had become quite worthless from neglect.

H. PADDELFORD.

St. Louis, March, 1856.

I would rather be the idol of one unsullied and unpracticed heart than the monarch of empires. I would rather possess the immaculate and impassioned devotion of one high-souled and enthusiastic female, than the sycophantic fawning of millions.

Nothing in life is so pure and devoted as woman's love.

The Home Circle.

THE FATHER.

Father! Child! Mysterious relationship!—How many hold it; how few appreciate it?—Fathers live in every neighborhood, but where are the fathers who comprehend the dignity of fatherhood? God is a father. He is the first, perfect, all-father. He is the fountain-head of all fatherhood. All fathers have grown out of him; all parent power has its origin in him. Human creatures are but the flowers that have budded and blossomed on the bosom of his paternity. Do fathers acknowledge the source of their parenticity? It is undevout to become a father without a prayer breathed to the giver of all paternity, or a thank-offering made for the mysterious yet beautiful gift.

Father! how tender the name! and how suggestive of mysterious powers! It was not blessing enough that God created man in his own image, but he conferred upon him the power of giving being to other men in his image. The father gives himself to his child; he remakes himself; by a mysterious process he moulds himself into his child. The essence of his being pervades the child's. Even the *character* of the father gives its tinges to the child.—There may be seeming exceptions, but this is the rule. The brutal father begets a brutal child; the high-souled father imparts nobility to his child. Powers, gifts and characteristics are hereditary. The roots of the father-soul strike into the child-nature. The seeds of the parental character are implanted in the very soil of the offspring being. A child must be like its father; must have the father daguerco-typed in itself. The likeness may be faint or strong but it must be exact.

How *fearful* a thing it is to be a father! His faults, his imperfections, weaknesses, impulses, passions, ruling loves and lusts, must all plant their germs in the very soul of the new being. They are checked and balanced by maternal inheritances, but nevertheless they go down from father to child through succeeding generations.

How *beautiful* a thing it is to be a father! His strong affections and virtues, his noble powers and generous spirit, his goodness and large-heartedness, strike their life-roots into the soil of the new soul and go down to succeeding generations, a rich paternal inheritance, and to its influence for good no man can set any bounds.

How *great* a thing it is to be a father! What powers, what labors, what reforms, what bril-

liance of mind and life, what strong results may follow in the line of a father's family?—Many a father unknown to fame has made the nation shake with the trumpet tongue of his son's or daughter's name. Tremendous effects for good or bad often follow father's of modest bearing. Truly it is a great, a fearful, a beautiful thing to be a father.

Fathers should realize all this, and do the best within their power to train their children to goodness, usefulness and honor. Much depends upon training. A child's character is easily moulded, and if bent may be easily made erect. The father's example is powerful. His words strike on tender ears which will readily catch up their tone and spirit. His acts will be repeated. Let the father think hourly of the tender and recipient nature of his child and beware of doing evil, beware of showing wrong in his life.

YOUNG MEN PAPERS.—No. 4.

When a young man has determined he is right, is satisfied that he has chosen a good business and one adapted to his taste and capacity, he has then only to go ahead. His motto should be onward. He should be determined on success. He should resolutely bend all his best powers to his work. It should become his pleasure, his meat and his drink. If he has any ambition it should be awakened, if not he should make some. He should be earnestly ambitious in avocation. His business should be good, useful, right. This is the first thought. Then it should be agreeable to his taste and within his capacity. Then prosecuted as though the world's weal depended upon it. We do not believe in spiritless, aimless young men. Every one should have the soul of a Napoleon in him so far as to be invincibly determined on success in his business. A humble business may be nobly prosecuted. Whatever one determines to do he should do with all his might. Perseverance wins the race and gains the battle. It was this that put up the pyramids, crossed the Alps, gained the American independence, discovered this continent, invented the telegraph, reduced science to system and did all that has been done that is great and good. Do not change your business, do not give up for trifles. Be proficient, be thorough, be expeditious, be in it with all your mind and might. A man's business is his word. In it he not only makes a living, but what is more, a character, a standing, a manhood and often all by which he is known and by which he acts. To be a finished farmer, mechanic, merchant or professional man, is to be

a man on a true and large scale, a man among men, who lives to a noble purpose, who grows by his living, whose business is better to him than any college. Business educates more men than schools; but it educates none but the earnest, the persevering, the high of soul. Take off your gloves and coats, young men, and go deliberately into business and don't put them on again till you dig success out of your calling. Lay off all baby notions about hard work, and buckle into it like men that no obstacles can conquer. Act a *manly* part. To dread work is weak. To shun the heat of the battle is cowardly. Do not expect success in a day. If a life-time will bring it, count it worth all it cost you. Some one has called ours "a nation in shirt sleeves." Would it were so. We need no ruffle-shirt gentry. We want men of bone and muscle, mind and heart, who count all labor as nothing, if by it they can succeed in an honest, high-minded business. Let our young men determine to be the men we want, the men our nation needs, the men the world is waiting to honor.

"CARRIE" has our thanks for this good article. May *her* home ever be as happy as the one she has pictured out:

[Written for the Valley Farmer.]

A HAPPY HOME.

What a blessed place is a happy home! What hallowed influences hover around it! What a holy charm it exerts over all its inmates and all who may be so fortunate as to enter its portals. Where can we find true happiness if it be not at our own fireside, in the presence of those nearest and dearest to us on earth. Every home should be a happy one. It should be to all the brightest and most attractive spot on earth. It should be to every heart the haven of peace and quiet, where nothing can come to disturb its tranquility. No home can be truly happy where there is not unity and harmony, or where there are selfish and exacting spirits, though such spirits if carefully and judiciously managed may be in a great measure overcome. Home is the place where the greatest portion of our time is to be spent, and if it be not happy, little there is for us to enjoy there or elsewhere.

There are few persons in this world, so uncongenial, but who can, if they try, do something to add to each others happiness, or at least avoid doing that which will cause the unhappiness of others. Duty, if not affection, should prompt them to do this. It is never a hopeless task to labor for the happiness of others, and what

greater recompense can we receive than to share the love of those by whom we are surrounded.—The smile, the kind word, the readiness to grant a favor, are ever ready for a friend, perhaps a comparative stranger—but how often are they disregarded and forgotten at home. It is the little kindnesses and attentions that do most towards making home happy. All the members of a family should be co-workers for each others interests and happiness. They should adopt the golden rule and practice it. Then we should have many brighter faces and lighter hearts, around us. There would be far less sin and misery in the world, and the homes we see on every side would seem like enchanted places, where heaven and earth are united.

CARRIE.

Letter from Chesnut Hill.

CHESTNUT HILL, Feb. 23d, 1856.

MESSRS EDITORS:—The *Valley Farmer* has come to our Northern homes this snowing, blowing February, wearing a face as genial as your own pleasant Mississippi valley, and a most welcome visitor it always is. But for fear it may not be in accordance with your ideas of etiquette for a lady to interest herself so warmly in a journal devoted to agriculture, I will restrain my enthusiasm for the present, but without yielding the point—that would indeed be unlady-like—will take some future opportunity, if your reception of this epistle should be sufficiently gracious to warrant me in doing so, to maintain, that as we have a common interest with our brothers in the results of "seedtime and harvest," as a mere matter of justice, not to speak of the motives of benevolence by which we are supposed to be actuated, we ought to contribute all the aid in our power in encouraging all laudable efforts for improvement in those important processes.

In my love for gardening, I am sure I may claim the sympathy of all refined tastes, and I have a great desire to be better informed in regard to your theories on Ornamental Gardening. Where all nature is "blossoming as the rose," the art that surpasses it must almost perform miracles.

The warm spring sun shines so much earlier into your gardens than ours, and autumn lingers so much longer too, that you have more time for the practical development of the art of Horticulture than we, but then we have the more time for *theorizing*. Sketching flower-beds and arranging shade-trees, walks and arbors, is very pleasant employment for our long winter

evenings. It is then we read the *Farmer*, and a few suggestions in its pages, from the editors for instance, would be very serviceable, for I have frequently detected in their dissertations upon the useful arts, symptoms of an inclination to make a digression upon the ornamental. If some of those ladies, who have such beautiful gardens, would in this way furnish me with a sketch of them, and some of the results of their experience in the care of them, I should be greatly obliged and have no doubt your other lady readers would be equally grateful.

If I had not so positively determined that my first letter should not offend by its length, I should be tempted even now to give you a description of Chestnut-Hill Garden, which, to tell the truth, appears best upon paper, being much more complete in the beautiful ideal we have formed in imagination, than in any realization we have yet been able to make of our theories. Consequently our plans are still open to improvement, and I doubt not but your columns will furnish us with suggestions for many additional embellishments.

I have already hinted at my anxiety as to the favorable reception of this my first epistle to the *Farmer*, and will close by expressing to you, confidentially, my belief, that my next will be much more entertaining.

A.

[Written for the Valley Farmer.]

THE STUDY OF NATURE.

The study of Nature is highly interesting, instructive and elevating to the soul. It opens to our view an inexhaustible fountain of knowledge. In it we read the great goodness of our Heavenly Father, his infinite wisdom and boundless love. We cannot gaze upon its beauties and sublimities, study its wonders and mysteries without having the conviction forced home to our hearts, that back of all, exists a great first cause—who fashioned all things as to him seemed good, who has through all time created and sustained all things through his wise and immutable laws and who still creates and sustains them.

The lover of Nature, he or she who communes often with it, meditates much upon it, must become more and more akin to its great Author, must learn many valuable and practicable lessons, lessons which will avail much in life's great vicissitudes. The tender blade of grass, the tiny flower, the little pebble, the gentle rain, the pure white snow, the majestic tree, the foaming cataract, the lofty mountain, the pathless ocean, the sky's blue dome, hath each

its useful lesson. As a poet hath said, "There are books in running brooks, sermons in stones, and good in everything."

Spring coming forth in her gay and lovely attire is an emblem of innocent, laughing childhood, the springtime of life. As at this time the husbandman carefully prepares his ground and sows his seed in expectation of an abundant harvest, so should the parent or guardian of childhood carefully unfold its little powers and sow in the fresh garden of its heart the seeds of virtue and truth. Summer represents youth. As at this time the husbandman cultivates assiduously the tender plants that have sprung up from the seed he has sown, rooting up the weeds until they are blossoming and bearing much fruit, so should youth cultivate and cherish most assiduously the tender plants of virtue and truth that have grown up in the heart, plucking up all noxious ones, until they are ready to yield a full and rich harvest. Autumn is emblematic of manhood. As at this season the husbandman reaps an abundance from the rich bosom of the earth as a reward of his labors and lays it by for winter's use so will manhood, if the spring and summer of life have been properly spent, reap a bountiful harvest of the soul's good things to lay by for the winter of age. As the winter of Nature, if rightly prepared for, brings with it innumerable blessings to the inmates of home, though storms may rage without, so should the winter of age be filled with blessings and the unspeakable peace of a life well spent, as a soul feeling its duties done and ready to depart and be at rest. The decay of Nature teaches us the dissolution of our own material organization but as vegetation comes forth with the returning spring in renewed freshness and beauty, so will our spirits outlive the decay of our bodies and appear in new beauty and glory beyond the tomb—Oh! how full of wisdom, how full of goodness is Nature! How the contemplation of it refreshes the wearied spirit, calms the troubled waters of the soul, refines, purifies and elevates the whole mind and soul of man.

I doubt if any one who studies Nature much, ever commits a very wicked act. This seems to be one great reason why those living in the country, generally speaking, are more upright and virtuous in their lives than those who dwell in cities. I love the country, I love to ramble in it, to breathe its wisdom, its inspiration, its love.

The farmer and his family, dwelling in the country and surrounded by its benign influences, have many sources of pleasure and improve-

ment, physically, mentally and spiritually, if they will but lay hold of them and make them their own, which the denizens of a city do not enjoy. How many sciences might they become proficient in, or, to say the least, well acquainted with, without interfering at all with their labors! Many times the field of labor and science lie together so that both can be pursued at the same time. The vegetating and fruitful seasons of the year unfold to them the beauties and wonders of the science of Botany and furnish them excellent opportunities for investigating it. The various animals they meet, such as quadrupeds, birds, fishes, reptiles, insects, &c., enable them to gain a knowledge of Zoology, or the science that treats of the animal kingdom. Exploring lands, digging the earth, and preparing it for cultivation presents an excellent means for becoming acquainted with Geology, which treats of the formation and structure of the earth and the many changes it has undergone and is still undergoing, also of studying mineralogy or minerals. Many of the long winter evenings may be devoted to the delightful study of the heavenly bodies under the science of Astronomy. Indeed the philosophy of the operations of Nature in general may be sought out and solved. The farmer and his family need not live in mental darkness; great intellectual light and happiness may and should pervade his home. Such a study of Nature will not only afford pleasing and useful topics for conversation around the family board and hearth, not only greatly improving the mind and heart, but adding much to the stock of agricultural knowledge by bringing to light many new truths connected with the best modes of agriculture. It will also create a taste for the simple and beautiful, a desire to beautify and make pleasant the home and its grounds.—Would the inhabitants of both country and city study Nature more, and the fashion and follies of the world less, the earth would present quite another and much more lovely aspect. May the time be hastened when the varied works of our Creator and the true ends of life shall be the chief studies of mankind.

SARAH.

COMPLAINERS.

There are not a few people in the world who are habitual complainers. They complain of the weather, the crops, the times, the cook, the nurse, their companions, the preacher, the teacher, their neighbor, the blacksmith, the tailor, the merchant, and so on to the end of the chapter of those they deal with. Everything goes wrongly. Nothing was made right. They are

ever whining and grumbling like a dog with a sore head. What sweet companions such people make! They are as agreeable to live with as gruff old bears or snarling hyenas. How delightful it is to take a good dish of complaint after you have done your best to serve one!—This complaining spirit is a kind of delightful peppersauce with which the home dishes are spiced. It is refreshing to home if thickly laid on! Go on, complainers, fretters, ye generation of whiners, your homes will be made little paradises by a few more repetitions of your stereotyped complaints. Your friends will love you to perfection if you only go bravely on. *

QUEER.

A writer in the *Rural New Yorker* rejoices in the delightful discovery of a substitute for coffee. The lovers of precious old Mocha may now rejoice. The fumes, the flavors, the charming spells of the coffee pot are to be succeeded by a substitute. Good! A cheap substitute! Better! Cheap as weeds! Best! What countless thousands of dollars will it save the pockets of our people. Better be in their pockets than going down their necks. Coffee dissolves gold and silver rapidly. A substitute that will not eat up money will be precious. Save the money and save the nerves too; and save a host of stomachs. Hot coffee! How it has eaten the life out of the pocket and stomach. The discoverer acknowledges to a love of the dear old coffee. He cannot give it up without a substitute, though it has unstrung his nerves, weakened his stomach and harmed his whole bodily structure. Such a *friend* he cannot part with without a substitute. It has emptied his pocket, addled his brain, corrupted his blood and done many mischiefs, and still he must have a substitute. Well, what is it?—Why, *dandelion roots!* Precious dandelion!—Coffee stand back!

But coffee is itself a substitute,—a substitute for water—pure, fresh, sparkling water, the drink of all lovely creatures. Why not throw it away and go back to water. Water is cheaper than dandelions, and a thousand times pleasanter. Water is ready made, flowing at our feet, over our heads, all around us. It is the drink that God has made for his children. The dissatisfied ones have tried to get up a substitute for coffee, and now they are throwing that away for another substitute. Better go back to water, the true beverage, healthful, cool, refreshing. Give us water; others may drink coffee and dandelions. *

Editor's Table.

ILLINOIS STATE FAIR—1856.

We received a visit to-day from W. F. M. Army, corresponding editor of the "Prairie Farmer," who is an indefatigable friend and laborer in the cause of Agriculture and Education. He has been spending a few weeks in the southern portion of the State of Illinois, for the advancement of the interests of the valuable paper of which the "good old Doctor Kennicott" is the Senior editor; and we find that while attending to their own interests, they are as usual, not unmindful of that of the farmers, mechanics and citizens generally of their State, as is evidenced by the following extract from the "Jonesboro Gazette:"

"We are glad to find that our citizens have taken hold of the State Fair, matter in earnest, and in the right way. A subscription book was opened a few days since, and the amount subscribed already reaches about fifteen hundred dollars, and one-fourth of the people who will subscribe have not yet had the opportunity. Every one seems to feel the advantages which must result to the whole county by having the Fair held at this place. For this state of feeling we are in a great part indebted to the able and eloquent speech of Mr. W. Army, delivered on last Saturday, after the delivery of which, no man we believe, who heard it, doubted the practicability and utility of holding the State Fair here. The only objection which we hear is, that some doubt our ability to entertain the number who will attend the Fair, but this we think the Illinois Central Railroad Company will obviate by taking persons who attend the Fair, and distributing them along the line where there are good hotels, at greatly reduced prices; at any rate, we can keep them if we try. We hope the farmers of the county will exert themselves to get a sufficient amount to make the holding of the fair at this place certain. Come up, everybody, and subscribe all you think you are able, and we assure you it will return you an hundred fold, either directly or indirectly. It will be worth five or ten dollars, just to watch the people coming from the depot to town."

We understand that two places are proposed at which to hold the next State exhibition of the "Illinois State Agricultural Society," either of which will be accessible to the citizens of Kentucky, Tennessee, and Missouri, and will give the mechanics, farmers and others an opportunity of exhibiting their articles, machinery and stock at but little expense, and we hope that the citizens of Louisville and St. Louis will not be behind in the exhibition of their handy-work. We have had our fears as to the ability of Salem, Jonesboro, or any other portion of the extreme South part of our sister State to sustain and support such an exhibition, and with credit to entertain with food and lodging those who may attend—but Mr. Army has removed all doubt as regards that matter, provided the St. Louis, Alton, and Terre Haute and Ohio & Mississippi Railroads will furnish facilities for transportation of stock and articles free and passengers at reduced fare. In this event tarpaulins and other facilities can be procured from St. Louis and along those roads which will enable the Board of Agriculture to make such arrangements as will accommodate agreeably every person who may desire to attend.

We may have more to say in relation to this proposed exhibition after the Executive Board has fully fixed the time and place of location.

We have been compelled to lay over many valuable communications which we hoped to have published

in this number. They shall appear as soon as our space will permit.

BACK NUMBERS.—So much greater has been the increase in the number of our subscribers, than we anticipated, that the edition of our back numbers is entirely exhausted. We made large calculations, and supposed that our edition would supply all our subscribers for the year, but the result shows we were mistaken. This fact will not be regretted more by our subscribers than it is by us. It would give us the greatest pleasure to furnish the numbers complete for the volume, but it is out of our power. With this number we commence striking off a much larger edition and can furnish subscribers with all the subsequent numbers commencing with April.

PROF. TURNER, of Jacksonville, Ill., has our grateful thanks for an excellent article on "The Prairie Hedge," as he terms it—i. e. the Osage Orange Hedge. The article did not come to hand till the agricultural department of our journal had gone to press, and consequently we were compelled much against our will, to lay it over for the next number. The farmers of the West owe Prof. Turner an eternal debt of gratitude for having introduced to their consideration the Maclura plant, which, when properly managed, forms a hedge which answers most admirably for farm fencing. The article is interesting and will remove all fears as to the utility of the Osage Orange Hedge.

ST. LOUIS AGRICULTURAL AND MECHANICAL ASSOCIATION.—We are gratified in being able to state that upwards of \$30,000 have already been subscribed to the capital stock of the Association. The Board of Directors are now looking about for suitable fair grounds, which they design to improve in a style not surpassed in the Eastern or Western country. They wish to purchase fifty acres contiguous to the city and make permanent and substantial improvements thereon. The Board of Directors are deserving the highest praise for the interest they have taken and the labor they have bestowed in behalf of the enterprise. There will be a meeting of the Board on Saturday the 29th of March, and we hope every member will be present.

KENTUCKY STATE AGRICULTURAL SOCIETY.—By an act of the Legislature of Kentucky, an annual appropriation of \$5,000 is to be made in aid of a State Agricultural Society. The act provides for the division of the State according to the Congressional districts, (twelve in number) each district may organize a Society and become auxiliary to the State Society.

Delegates are to meet in Frankfort, for the election of officers.

AGRICULTURAL REPORT OF THE COMMISSIONER OF PATENTS FOR THE YEAR 1854.—We are under obligations to Judge Mason, Commissioner of Patents, for a copy of this work, and we do not hesitate to pronounce it the most valuable volume that has been issued from that office. The plates and descriptions of "Insects Injurious and Beneficial to Vegetation," by Townsend Glover, is a valuable and interesting paper; it contains a large amount of other valuable matter on various subjects relating to agriculture. The work is well arranged, and the paper and mechanical execution are better than any previous volume.

TRANSACTIONS OF THE ILLINOIS STATE AGRICULTURAL SOCIETY, Vol. 1—1853, '54.—We are indebted to our worthy friend Dr. J. A. Kennicott, Corresponding Secretary of the Society, for a copy of this work. It is a neat volume of upwards of 600 pages of admirably arranged and valuable matter, and affords the most gratifying evidence of the prosperity and rapid progress the youthful State of Illinois is making in agriculture, the true basis of State and National prosperity.

TRANSACTIONS OF THE OHIO STATE POMOLOGICAL SOCIETY, SEVENTH SESSION.—We are indebted to M. B. Batham, Esq., of Columbus, Ohio, and A. H. Ernst, of Cincinnati, Ohio, for copies of this work. It contains a full discussion upon the merits of the various fruits exhibited at Columbus on the 13th of September last, and also at the regular annual meeting held at Cleveland, January 8th and 9th. We shall publish at some future time, the remarks upon some of the most valuable fruits exhibited.

THE AMERICAN VETERINARY JOURNAL.—Devoted to the diffusion of Veterinary knowledge, edited by George H. Dadd, Veterinary Surgeon. A work of this kind has long been needed in the United States, and we are glad that Dr. Dadd has undertaken it. We are acquainted with the editor and know him to be one of the best educated practitioners in the country.

We have received the March number of this Journal; it contains a large amount of valuable information on the subject of the diseases of domestic animals. Every farmer at least, should subscribe for it. It is in octavo form, containing 32 pages, and printed on fine paper and in large, clear type. It is published monthly at Boston, Mass., by S. N. Thompson, at the low price of \$1.00 a year, or six copies for \$5.00.

U. S. AGRICULTURAL SOCIETY.—It has been determined to hold the next exhibition of this Society at Philadelphia. Forty gentlemen of that city have guaranteed \$15,000 to defray the expenses. Arrangements are in progress to secure a magnificent display. In addition to animals of the various classes heretofore exhibited, agricultural implements, cereal and vegetable products, poultry, and native fruits and wines will be embraced.

A grand banquet, in which ladies will participate, is also determined as part of the programme. From \$12,000 to \$15,000 are to be appropriated in premiums. The 7th of October is the day appointed for the opening of the exhibition.

CORRECTION.—Several typographical errors were inadvertently permitted to pass in the March number of the Valley Farmer, some of which the reader may be able to correct. In the article on the "Culture of Hemp," page 80, the printer makes a mistake in the name of the Government Hemp agent at Lexington, Ky.; it should read Col C. J. Sanders, and not Landus.

In the advertisement of Avery's Foundry and Plow Manufactory, at Lexington, Ky., the name of Thomas Waird, the distinguished plow pattern maker, is erroneously made to read Thomas Waine.

ARTHUR'S HOME MAGAZINE.—The first three numbers of the present volume of this highly popular Magazine are upon our table. We can cordially recommend it to every family in the land. Terms \$2, per year for a single copy; four copies \$5. Address T. S. Arthur & Co., Philadelphia.

MESSRS. ELLIOTT & Co., of Cleveland, Ohio, have our thanks for a package of garden seeds of the choicest varieties. They are just what we need, and we will give them a trial in our garden, in a few days—the weather being propitious—and in due time report the result.—From the high reputation that Elliott & Co. enjoy as dealers in seeds, &c., we have no doubt that our garden will abound in the choicest vegetables the coming season.

THE ILLINOIS FARMER.—This is the title of a new Agricultural Journal which has recently been started at Springfield, Ill. It is published in octavo form, and contains 24 pages of reading matter. We wish the editor and publisher, S. Francis, Esq., much success. Terms \$1.00 per year.

THE PRAIRIE FARMER.—This old friend and co-worker makes his visits in 1856, after a long journey over the prairies, so changed in form and improved in appearance, that but for his name, which appears in large capitals, we should not have recognized him. He now proposes to visit his numerous friends fifty-two, instead of but twelve times a year. We like intelligent and entertaining company, and the more frequent the calls the better. The Prairie Farmer has reached the advanced age of fifteen years. It commences the new volume in folio form. It is published at the "fast city" of Chicago, Ill., by John S. Wright, and is edited by Dr. John Kennicott, Charles Betts, C. D. Bragdon and W. F. M. Arny. Terms \$2 a year.

We are in receipt of the first three numbers of the "North-western Farmer and Horticultural Journal," published at the prosperous city of Dubuque, Iowa, by Mark Miller and J. C. Brayton. It is a monthly journal in octavo form, containing 32 pages reading matter and is edited in all its departments with much ability. J. C. Brayton, Esq., the editor of the Horticultural department ranks among the first of the Horticulturists of the west. The work is deserving of a liberal support from the farmers of the West. Terms \$1.00 per year single copy. Reduction to clubs.

LINX GROVE AGRICULTURAL CLUB.—This is the name of a club which has been in existence for some time at or near Fairfield, Ill. It is composed altogether of farmers, who, in the winter season we believe, have weekly meetings, and in the summer season, monthly meetings, for the purpose of considering agricultural questions, and having a social and friendly gathering. They are forming a fine agricultural library and subscribing for the best agricultural journals in the country, which of course includes the Valley Farmer. All praise to the enterprising members of this Club. Could we have our way, there would not be a neighborhood in the West, but which had a Farmer's Club in it, with the finest Agricultural Library that could be procured. Let our readers make an effort to start a Club in each neighborhood. If properly attended and conducted it would be of incalculable value to the agricultural interests of the country.

CLUB RATES.—We have frequently been asked whether additions to clubs already formed can be made at club rates, at any subsequent time. This is a privilege that we allow our subscribers, and we shall be glad to receive additions at all times.

THE GOOD TEMPLAR.—This popular Temperance Magazine for March is upon our table. It is an able advocate of the cause which it supports. It is published in Octavo form, in neat style, containing 32 pages by B. H. Mills, St Louis, Mo., at \$1 00 per annum.

ORNAMENTAL SHRUBS.—We have a very interesting article in type on Ornamental Shrubs from our popular contributor, "N. B.," which we are compelled to lay over for the next Number.

INQUIRIES.

I design erecting a patent grist mill to grind my own and probably some of my neighbors grain. I wish to know the best patent, taking into consideration the quantity ground in a given time, durability and cost.—It is quite likely that some of the numerous readers of the Valley Farmer. Any information upon the subject will be very acceptable. A FARMER.

J. L. B., of Sparta, Ill., desires information in reference to a wire fence—cost per rod, &c.

H. C., of Union, Mo., desires to know where he can obtain some pigs of the improved breeds.

Malone's Hand Corn Planter.

MESSRS. EDITORS:—I would respectfully call the attention of your readers to an article published in your last number by Wm. M. Plant & Co., introducing this machine, and to their personal attacks on your associate editor and myself. What are the facts in the case! Many of my Randall & Jones' Planters were sold from your office last year by your associate editor, and he had very favorable reports from them. He also saw many certificates of like character from persons to whom I sold them, and from those certificates of farmers who had tested the machine and approved it, together with his own conviction of the great utility of the machine, he noticed it editorially and recommended it. Now, gentlemen, Plant & Co. say "They know the machine is not what it is recommended to be, certificates and recommendations to the contrary notwithstanding." Here, at this point a question of veracity arises. Who is to be believed—Plant & Co., who are introducing a Corn Planter that has been in use three years, and for want of sufficient testimony of the utility of the machine to convince the least skeptical mind of its value, are endeavoring to force it on the public by distorting facts—or the two hundred farmers who had given me certificates after testing my Randall & Jones' Corn Planter! I leave your readers to decide the question. I am only sorry Plant & Co. did not find it necessary to produce the evidence of the failure of my Planter "throughout the entire Union," or ANY PART OF IT, and thus prove to the public his assertions. It would have been so good an opening for them that I am surprised that they did not take advantage of it. I shall not further notice them, as I am opposed to quarreling in print or any other way; and in taking leave of them at this time, I would remind them of a precept taught them in youth, but which I fear they have departed from in manhood, viz: that "honesty is the best policy" in making statements. E. LEIGH.

ADVERTISEMENTS

To secure insertion in the Valley Farmer, must be received in our office, as early as the 15th of the previous month. See terms.

FARM PRODUCT MARKETS.

ST. LOUIS MARKET.

Sr. Louis, March 25, 1856.

FLOUR—\$6 50 @ \$7 50 as to quality.

GRAIN.—Wheat ranges from \$1 00 to \$1 40, as to quality; Corn 35 a 37½c; Oats 30c; Barley in demand and ranging from \$1 40 to \$1 75 as to quality; Rye 80c; Beans \$2 00.

DRIED FRUIT.—Dried apples range from \$1 35 to \$1 50. Peaches \$2 00 a \$2 25 per bush.

FLAX SEED—Firm at \$1 65. Clover \$8 50 to \$9 00 per bbl. Timothy \$2 50 a \$3 00.

LOUISVILLE MARKET.

LOUISVILLE, March 25, 1856.

FLOUR—Superfine in lots \$5 50 @ \$5 75. Retail \$6 per bbl.

GRAIN.—Wheat \$1 00. Dealers are paying for corn 30c. Oats 25c. Rye 50c.

SEEDS.—We quote Hemp, \$1 25. Orchard and herd, \$2 00; Stripped blue grass 90 @ \$1 00; Clean \$1 50; Timothy \$3 50; Clover \$8 50 @ \$9 50 per bbl.

BEEVES—2½ @ 3c gross. Market well supplied.—Sheep \$2 @ \$5 per head. Hogs 4 @ 5c gross.

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Wyandott Corn.

Please state for the benefit of those who desire to obtain seed of the Wyandott Corn, that by enclosing me 20 cents in stamps, I will send them 25 grains of the corn. I procured my seed of Mr. Thomas, last spring. I have something near a peck yet to dispose of. Direct to Fayette Turner, Fairfield, Wayne Co., Ill.

The Lawton Blackberry.

Having accepted from Mr. Lawton the agency for this remarkable fruit, we are prepared to furnish plants at the following rates:

Half a dozen plants.....	\$ 3 00
One " " ".....	5 00
Fifty " " ".....	15 00
One hundred " " ".....	25 00

Carefully packed and shipped from New York without extra charge. The money should accompany the order. C. M. SEXTON & CO.,

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Our Catalogue of Agricultural Books,

Comprising Seventy-five Books on Agriculture, Will be sent postage free to all who will favor us with their name and address.

Among the books recently published by us are:

Chorlton's Grape Grower's Guide.	60c.
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Cranberry Culture.	50c.
Strawberry Culture.	60c.
Elliott's American Fruit Grower's Guide.	\$1 25.
The Stable Book.	\$1.
Boussingault's Rural Economy.	\$1 25.
Thompson on food of Animals.	75c.
Practical Land-Drainer.	50c.

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alt. Agricultural Book Publishers, No. 140 Fulton street, N. Y.